BIHAR LIBRARIAN 2025

This book is specially dedicated to the aspirants of the Bihar Staff Selection Commission – Librarian Examination 2025. It is intended to assist candidates by providing structured, relevant, and accessible content based on important topics in Library and Information Science.

SAKET SHARMA

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This book is specially dedicated to the aspirants of the **Bihar Staff Selection Commission – Librarian Examination 2025**. It is intended to assist candidates by providing structured, relevant, and accessible content based on important topics in **Library and Information Science**.

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Release Date: 26 Aug 2025

Covered Chapters

This edition of the book includes the following chapters from **Library and Information Science**:

1. Foundation and Organization of Library
- Functions and Objectives of Libraries
- Library Legislation in India
- Library as a Social and Educational Institution
- Types of Libraries: Academic, Public, Special, National

2. Library Management
- Circulation System: Charging and Discharging
- Stock Verification and Weeding
- Budget Management and Accounting
- Collection Development: Selection and Acquisition
- Technical Processing: Classification and Cataloguing
- Classification Systems: DDC, UDC, CC
- Cataloguing Rules: AACR2, RDA

3. Reference and Information Services
- Information Literacy and User Education
- Document Delivery and Inter-Library Loan
- Reference Services: Concept and Types (Short Range and Long Range)
- Reference Sources: Encyclopedias, Dictionaries, Directories, Biographical Sources

4. Information Technology and Library Automation
- Digital Libraries and E-Resources
- Internet and Database Usage
- *Barcode and RFID Technology*
- Use of Computers in Library Operations
- Library Management Software: SOUL, KOHA, E-Granthalaya

5. Library Networks and Resource Sharing
- Concept and Types of Information
- Information Search Process and Techniques
- Research Methods: Quantitative and Qualitative
- National and International Library Networks: INFLIBNET, DELNET, OCLC
- Concept and Importance of Resource Sharing
- Digital Repositories: Shodhganga, National Digital Library (NDL)

6. Information Science and Research Methods
- Bibliometrics and Webmetrics
- Code of Ethics for Library Professionals
- Library Associations and Professional Organizations
    - National: Indian Library Association (ILA), IASLIC
    - International: International Federation of Library Associations (IFLA), American Library Association (ALA)

7. Standards and Copyright
- International Standards: ISBN, ISSN, MARC
- Copyright and Intellectual Property Rights

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Chapter 1: Foundation and Organization of Library

1.1 Definition of a Library

1. **Origin of the Word**
   - Derived from Latin word *"libraria" → "a book place"*.
   - From Latin term *"liber" → "a book"*.
2. **Oxford Companion to the English Language (Tom MacArthur)**
   - *Library = A collection of books, periodicals, and/or other materials, primarily written and printed.*
3. **Harrod's Librarian's Glossary and Reference Book**
   - Defines a library as:
     3.1 A collection of books and literary materials for reading, study, and consultation.
     3.2 A place, building, or room for keeping and using books.
     3.3 A number of books issued under a comprehensive title (e.g., *Loeb Classical Library*).
     3.4 A collection of non-book materials (films, photographs, tapes, disks, programs, etc.).
4. **Pierce Butler's View**
   - Library = *A social organization*.
   - Purpose: To transmit accumulated experience of society.
   - Mediums: Books, maps, charts, phonograph records, microfilms, etc.
5. **Dr. S. R. Ranganathan's Definition**
   - Library = *A public institution*.
   - Duties:
     - Care and collection of books.
     - Making books accessible to those who need them.
6. **Derived Meaning**
   - Library is an **organization of recorded human thought**.
   - Records exist in different forms: manuscripts, books, periodicals, audiovisuals, microfilms, graphs, charts, etc.
   - Purpose: To arrange, store, preserve, and provide effective use of materials for present and future users.

1.2 Functions of a Library

Libraries perform multiple roles in society by encouraging people to think and act independently. They help individuals develop their **creative and critical capacities**, along with powers of appreciation. The major functions can be summarized as follows:

- To foster and promote the spread of knowledge, education, and culture.
- To provide facilities for **formal and informal life-long self-education** to all members of the community.
- To preserve the **literary and cultural heritage of humanity** for future generations as vehicles of culture and material for research.
- To provide **reliable information** for all users regardless of age, caste, creed, religion, gender, or social background.

In summary, the functions of a library can be grouped into four broad categories:

(a) Education

- Helps in the **self-development of individuals and groups** at any stage of learning.
- Narrows the gap between the individual and recorded knowledge.
- Supports all forms of education: **formal, non-formal, adult, and life-long learning**.

- Provides adequate stock of books, journals, and learning materials accessible to the community.

(b) Information

- Provides **accurate and timely information** to individuals or groups, especially on current and relevant topics.
- Extends information services to cover **socio-economic needs** of society.
- Acts as an **information and referral centre**, guiding users to specialized sources.
- Collects and disseminates information on:
    - Employment opportunities
    - Public utility services
    - Social awareness programmes

(c) Culture

- Serves as a **principal centre of cultural life** in the community.
- Encourages participation, enjoyment, and appreciation of the arts.
- Promotes culture in two ways:
    1. By **reading and thinking**, which widens mental horizons and develops creativity.
    2. By **cultural enrichment of society** through activities such as:
        - Lectures
        - Seminars and symposia
        - Book exhibitions
        - Cultural gatherings

(d) Recreation

- Encourages the positive use of leisure time.
- Provides reading materials such as fiction, magazines, and newspapers for relaxation.
- Offers audio-visual materials (films, television, radio, audio-video cassettes, etc.) for recreational learning.
- Organizes performing arts and community events, making libraries true community centres.

1.3 Role of Libraries in Society and Education

Libraries play a vital role in the socio-economic, cultural, and educational development of society. They are not only centres of information but also institutions that foster education, culture, recreation, and social integration.

1.3.1 Library as a Social Institution

Library service is considered a **social necessity** for cooperative cultural life and the steady development of society. As a social institution, the library serves several purposes:

1. Supports life-long self-education for everyone.
2. Provides up-to-date facts and information on all subjects.
3. Distributes recorded knowledge in an unbiased and balanced manner.
4. Provides a safe and elevating use of leisure time.
5. Preserves the literary and cultural heritage of humanity for research.
6. Works for the social well-being of the community as the custodian of recorded thought.

(a) Library for Raising Cultural Level

- Enhances the intelligence, status, and common sense of individuals.
- Encourages reading habits and refines reading tastes.
- Supports research, recreation, and information needs of the community.

(b) Library as an Instrument for Creating Refined Citizens

- Builds a literate and enlightened society.
- Provides access to a wide range of resources to broaden outlook, knowledge, and ideas.
- Strengthens democracy by fostering informed and educated citizens.

- Enables individuals to judge right and wrong and solve problems rationally.

(c) Library Promotes the Desire for Books

- Develops and strengthens reading habits.
- Creates a love for books by making them easily available.
- Contributes to the growth of book culture in society.

(d) Library Facilitates Social Integration

- Serves as a hub for democratic living.
- Organizes talks, lectures, films, discussions, book exhibitions, and community events.
- Provides an equal platform for all groups in society.

(e) Library Preserves Knowledge

- Maintains archives of rare and old documents.
- Preserves the literary heritage of humanity for future generations.
- Assists researchers in historical and antiquarian studies.

1.3.2 Role of Library in Education

Education and training are essential for economic and social development. Libraries are inevitable for both formal and informal education, serving as the backbone of the educational system. Without libraries, there can be no effective schools, colleges, or lifelong learning.

(a) Library as the People's University

- Acts as a "University of the People" by providing free access to knowledge.
- Helps individuals acquire knowledge and skills for self-development.
- Supports the organization and progress of society.

(b) Library as a Centre of Mass Education

- Public libraries play a vital role in political awareness, socio-economic growth, cultural enrichment, and educational development.
- Provides facilities for education, information, recreation, aesthetic appreciation, and research to all, irrespective of age, gender, or social background.

(c) Library as a Centre of Continuing Education

- Encourages lifelong learning by supporting continuous reading habits.
- Develops vocational, professional, and problem-solving skills.
- Provides informal education to both literates and neo-literates.
- Acts as a life-long educational partner for the community.

1.4 Advantages of Library Legislation

A Library Act provides the following advantages:

1. Helps in the establishment of an organized network of public libraries.
2. Ensures a sound administrative set-up.
3. Provides proper and continuous financial support.
4. Facilitates coordination in administration and management of public libraries.
5. Enables centralized services such as purchase, processing, bibliographical and other professional services.
6. Makes it possible to provide quality library services, with qualified staff, free of charge.

1.5 Functions of Library Legislation

The **Advisory Committee for Libraries (1958)**, constituted by the Government of India, proposed the following five functions:

1. Clearly define the **government's responsibility** towards public libraries.
2. Lay down the **constitution and functions of library authorities** at national, state, and district levels.

3. Provide a firm basis for **library finance**:
    - (i) A special library cess.
    - (ii) Reservation of a certain percentage of the education budget.
4. Define the **structure of the public library system**.
5. Ensure **public participation** in library governance at all levels.

1.6 Factors for Consideration in Library Legislation

According to **C.O. Houle** (*Libraries in Adult and Fundamental Education*), the following factors should be considered:

1. Legislation must be **simple and general**, allowing for future development.
2. It should remain unaffected by **political changes**.
3. The law must ensure that libraries are possible, encouraged, and supported.
4. It should **coordinate and regulate library activities** while safeguarding free access to knowledge.
5. It must specify the **duties, privileges, and financial support** for public libraries.
6. Responsibilities of **local, state, and national administrations** must be clearly defined.
7. Law may provide for either **state establishment of libraries** or state aid to local governments.
8. Library services should be **compulsory** if resources permit.
9. Public libraries must be **free for all** and supplemented by academic and specialized libraries.
10. All libraries should provide **free lending services** through cooperative schemes.
11. Stock should reflect **all shades of opinion**, with censorship only on material inciting crime/violence.
12. Provision for **children's libraries, school libraries, defense services, and merchant marine** should be included.

1.7 History of Library Legislation

1.7.1 Great Britain

- **Edward Edwards** of the British Museum strongly advocated for public libraries funded by legislation.
- **William Ewart** presented a proposal in the British Parliament in **1849**.
- The **Public Libraries Act** was passed on **14 August 1850**.
- This was the **first Library Act in the world**, a landmark in the history of library development.

1.7.2 India

(a) Ranganathan's UK Experience (1924)

- Prof. S.R. Ranganathan visited the UK in 1924.
- He observed the working of the Library Act and realized its importance for India.

(b) Model Library Act (1930)

- Ranganathan prepared a **Model Library Act**.
- Presented at the **All Asia Educational Conference, Banaras (1930)**.

(c) Attempt in Bengal

- Kumara Munindra Deb Roy Mahasay introduced a draft Bill in Bengal with Ranganathan's help.
- Rejected by the **Governor General of India** due to compulsory clauses.

(d) Efforts in Madras

- **1931**: Janab Basheer Ahmed Sayyad introduced a Library Bill in Madras Legislature. Failed due to objections from Local Self-Government.
- **1935**: A second attempt failed when the Madras Legislature was dissolved.

1.7.3 First Library Act in India

- A third attempt by the **Madras Library Association** succeeded in **1948**.
- Passed under the leadership of **Avinasalingam Chettiar (Minister for Education, Madras State)**.
- Became the **first Library Act in Independent India**.

1.7.4 Kolhapur Public Libraries Act, 1945

- The **first-ever Library Act in India** was enacted in the **Kolhapur Princely State (now Maharashtra)**.
- Declared **Karveer Nagar Wachan Mandir** as the State Central Library.
- Provided for **mobile library services** and **library training classes**.

1.7.5 Efforts Outside Madras

Other states also attempted library legislation, often with Ranganathan's support:

1. CP & Berar – 1946 (drafted by Ranganathan).
2. Travancore – 1947 (drafted by Ranganathan).
3. Cochin – 1947 (drafted by Ranganathan).
4. United Provinces – 1949 (drafted by Ranganathan).
5. Kashmir – 1949 (drafted by P.N. Kaula).
    - Kaula also drafted a Bill for **Delhi**, but it was not accepted.

1.8 Model Bill and Acts in India

1.8.1 Union Bill of Ranganathan (1948)

In 1948, the Government of India appointed a committee to explore the establishment of a National Central Library at New Delhi. Dr. S.R. Ranganathan submitted his report *Library Development Plan: Thirty-Year Programme for India*, along with a draft Library Bill for the Union and Constituent States.

Salient features:

1. Establishment of a State Library Authority.
2. Formation of a State Library Committee.
3. Creation of a Department of Public Libraries, headed by the State Librarian.
4. Setting up of a Local Library Authority at the district level.
5. Establishment of: (a) State Library Service (b) State Bureau for the Blind (c) State Bureau of Inter-Library Loan (d) State Bureau of Technical Services
6. Creation of a State Library Fund, with provision for Library Cess.

1.8.2 Model Public Libraries Bill, 1963

Based on the recommendations of the Advisory Committee for Libraries, the Union Government formed a Committee of Experts under the chairmanship of Mr. Sen. The Model Bill was released in 1963 and circulated to state governments and library associations.

Salient features:

1. Establishment of a State Library Council.
2. Formation of a State Library Directorate to handle administration and technical matters.
3. A State Library Committee responsible for preparing a perspective plan.
4. No provision for Library Cess.

1.8.3 Model Public Libraries Bill, 1965

During preparation of the Fourth Five-Year Plan, the Planning Commission appointed a Working Group on Libraries (1964) under Dr. V.K.R.V. Rao. The report included a Model Public Libraries Bill.

Salient features:

1. Committee of Experts (similar to a State Library Authority).
2. State Library Council (advisory in nature).
3. State Library Directorate (to supervise, control, and direct the State Library System).
4. Establishment of a Public Library System comprising: (a) State Central Library (b) State Regional/Divisional Libraries (c) District Libraries (d) Local Libraries.
5. Provision for training facilities for employees.
6. Creation of a State Library Service.
7. No recommendation for Library Cess.

1.8.4 Indian Library Association's Model Libraries Act, 1989

The Indian Library Association (ILA) has consistently worked for library legislation: circulated Ranganathan's Model Bill (1942); passed a resolution at the IX All India Library Conference (Nagpur, 1948) urging the Government of India to act; organized seminars at Patna (1964), Chandigarh (1947), Delhi (1978), and Hyderabad (1981) on state library legislation. In 1989, Dr. V. Venkatappaiah prepared a Model Public Libraries Act under ILA's Central Sectional Committee on Public Libraries. This was discussed at a seminar in Delhi (1990) organized by ILA in collaboration with RRRLF.

Salient features:

1. State Library Authority with Minister for Libraries as Head.
2. State Library Council.
3. Department of Public Libraries with a qualified person as Director.
4. State, Regional, City/District Library Authorities.
5. Establishment of: (a) State Planning Board (b) Staff Welfare Board (c) Board of Library Education (d) State Book Development Council (e) Adult Education Council.
6. Grant-in-aid to Private Libraries.
7. Library Cess and equal matching grant from the State Government.
8. Public enquiry on any irregularity.
9. State Library Service.

1.8.5 Ranganathan's Draft Bills for Various States

- Central Provinces – 1946
- Cochin – 1946
- Travancore – 1947
- United Provinces – 1949
- Hyderabad – 1953
- Madhya Pradesh – 1957
- Andhra Pradesh – 1957
- West Bengal – 1958
- Uttar Pradesh (Revised) – 1958
- Kerala – 1960
- Mysore (now Karnataka) – 1961
- Assam – 1964

1.9 Kaula's Bills

Prof. P.N. Kaula drafted Library Development Plans and Model Library Bills for:

- Jammu & Kashmir (1951)
- Delhi (then Part C State) (1954)

1.10 Efforts Made by Others

Apart from Dr. S.R. Ranganathan, Kumara Munindra Deb Rai Mahasay, and Dr. V. Venkatappaiah, several others contributed to library legislation in their respective states. These include Rao Bahadur S.K. Bole, A.A.A. Fyzee (Bombay State), R.L. Mittal, G.L. Trehan (Punjab), V.S. Moghe (Madhya Pradesh), M.L. Bhagi (Haryana), B.B. Shukla (Orissa), S.R. Gupta, and S.S. Varma (Delhi).

1.11 Efforts of State Library Associations

Several library associations have taken keen interest in promoting library legislation in their respective states:

1. Assam Library Association
2. Bengal Library Association

3. Delhi Library Association
4. Gujarat Library Association
5. Haryana Library Association
6. Kerala Library Association
7. Madhya Pradesh Library Association
8. Punjab Library Association
9. Rajasthan Library Association
10. Uttar Pradesh Library Association

1.12 Library Acts in India

1. Kolhapur Public Libraries Act (1945) – Non-functional
2. Madras Public Libraries Act (1948) – Now called Tamil Nadu Public Libraries Act
3. Hyderabad Public Libraries Act (1955) – Non-functional
4. Andhra Pradesh Public Libraries Act (1960)
5. Mysore Public Libraries Act (1965) – Now called Karnataka Public Libraries Act
6. Maharashtra Public Library Act (1967)
7. West Bengal Public Libraries Act (1979)
8. Manipur Public Libraries Act (1988)
9. Kerala Public Libraries Act (1989)
10. Haryana Public Libraries Act (1989)
11. Mizoram Public Libraries Act (1994)
12. Goa Public Libraries Act (1994)
13. Gujarat Public Libraries Act (2001)
14. Orissa Public Libraries Act (2001)
15. Uttaranchal Public Library Act (2005)
16. Rajasthan Public Library Act (2006)
17. Uttar Pradesh Public Library Act (2006)
18. Bihar Public Libraries and Information Centres Act (2008)
19. Chhattisgarh Public Libraries Act (2008)
20. Arunachal Pradesh Public Libraries Act (2009)

1.13 Operation of the Acts

Out of the 20 library acts, the Kolhapur Act was confined to a State Library without a system for the entire state, and later lost relevance when Kolhapur merged with Bombay Presidency. The Hyderabad State was disintegrated and merged into Andhra Pradesh, Maharashtra, and Karnataka, rendering its 1955 Act ineffective. Excluding these, 18 states have library legislation on their statute books. Among them, only 10 states have fully operational public library systems, while 8 states, though having enacted laws, have not implemented them effectively.

1.14 How Far the Acts Succeeded?

1.14.1 No Devotion to the Cause

India's independence and the enactment of library laws coincided. People began to view library services as solely the responsibility of the government, leading to declining public participation. Libraries established under the Acts suffered from bureaucracy, and librarians often saw their role as mere employment rather than a service.

1.14.2 Infrastructure Facilities are Lacking

Earlier Acts, up to West Bengal's, considered Library Cess as a major source of revenue, even covering salaries of Local Library Authorities. However, cess recovery proved difficult, yielding meagre collections

that left employees unpaid for months. Eventually, state governments provincialised library employees' services. Ranganathan's advocacy of cess was questioned, as the UK had abandoned it in 1919. Libraries continued to face shortages of proper book stock, furniture, and suitable buildings.

1.14.3 Competition from Media

With radio, television, newspapers, and the internet, people have less time for libraries, reducing library footfall. Libraries must innovate to remain relevant and useful to society.

1.14.4 New Orientation to Services

In advanced countries, libraries evolved into community information centres and later community resource centres. Public libraries now focus on attracting young people, cultivating reading habits, and building knowledge from an early age.

1.15 Library as a Social and Educational Institution

The library, often depicted as a sanctuary of books and knowledge, transcends its physical presence to become a dynamic and indispensable social institution. Beyond its shelves of literary treasures, a library serves as a vibrant hub of human interaction, learning, and community enrichment. As a social institution, the library is pivotal in shaping society's intellectual and cultural tapestry. It is a place where individuals of all backgrounds come together to explore the boundless realms of human thought, foster connections, and engage in lifelong learning.

1.16 What are Social Institutions?

Social institutions are established, organized, and widely accepted structures and systems within a society that serve essential functions, shape human behavior, and maintain social order. These institutions encompass various domains of human life, such as family, education, religion, government, the economy, healthcare, and more. They provide the framework for individuals to navigate their roles, responsibilities, and interactions within a community. Social institutions are critical for meeting basic human needs, preserving cultural values and traditions, fostering socialization, and ensuring the functioning and stability of society. They serve as the building blocks of civilization, influencing individual choices and collective behaviors while contributing to the overall well-being and cohesion of communities and societies.

1.17 What are the Functions of Social Institutions?

Social institutions serve several essential functions within a society, contributing to its stability, order, and overall well-being. These functions vary across different institutions but generally include the following:

1. **Meeting Basic Needs** – Families and economic systems ensure food, shelter, clothing, and healthcare. Families provide emotional support and care, while the economy oversees production and distribution of goods and services.
2. **Socialization** – Families, schools, and religious institutions transmit knowledge, norms, values, and cultural practices, preparing individuals for participation in society.
3. **Preserving Values and Traditions** – Cultural and religious institutions preserve and pass down traditions, values, and beliefs, maintaining cultural continuity and identity.
4. **Maintaining Social Order** – Legal and political institutions create laws and governance systems that regulate behavior, resolve disputes, and ensure peaceful coexistence.
5. **Promoting Economic Stability** – Economic institutions regulate trade, labor, currency, and resource management to stabilize the economy.
6. **Promoting Education and Knowledge** – Schools and universities impart skills, knowledge, and critical thinking, fostering intellectual growth and societal advancement.
7. **Providing Healthcare and Public Health** – Hospitals, clinics, and health agencies provide medical care, promote wellness, and improve public health.

8. **Cultural Enrichment** – Museums, cultural centers, and artistic institutions preserve heritage and encourage creativity and artistic expression.
9. **Communication and Media** – Newspapers, television, and online platforms disseminate news, ideas, and entertainment, shaping public opinion and social discourse.
10. **Promoting Social Welfare** – Social security systems and welfare programs support vulnerable groups such as the elderly, disabled, and needy.
11. **National Security and Defense** – Defense institutions safeguard a nation's security and protect it from external threats.
12. **Promoting Democratic Values** – Political institutions enable citizen participation, democratic decision-making, and representation in governance.

These functions collectively contribute to the functioning and cohesion of society, ensuring the well-being of individuals while supporting cultural, economic, and political stability. Although their specific roles may differ across cultures, social institutions remain indispensable to human civilization.

1.18 Library as a Social Institution

- Libraries are not just book repositories but dynamic social institutions.
- Serve as gateways to knowledge (books, manuscripts, digital resources).
- Ensure equal access to information for all, irrespective of background.
- Act as community centers – people meet, share, and collaborate.
- Preserve cultural heritage, history, and literature.
- Embrace technology – provide internet, computers, digital literacy training.
- Promote intellectual freedom by resisting censorship.
- Embody values of education, inclusivity, democracy, and progress.

1.19 The Role of Libraries in Promoting Literacy, Education, and Lifelong Learning

- Libraries promote literacy from childhood to adulthood.
- Offer storytime sessions, reading programs, ESL, GED, and adult education.
- Provide safe study environments and guidance from librarians.
- Encourage lifelong learning through workshops, lectures, online resources.
- Support career development with skill-based and professional programs.
- Act as cultural hubs (book clubs, exhibitions, community events).
- Foster social cohesion by bringing people together.
- Remain vital in digital age – offering e-books, courses, and critical thinking skills.

1.20 Types of Libraries

- Libraries are broadly categorized into **four types**:
    1. **Academic Libraries** – part of educational institutions (schools, colleges, universities).
    2. **Public Libraries** – serve the general public.
    3. **Special Libraries** – support research, industry, business, R&D.
    4. **National Libraries** – acquire and preserve all documents of/about a nation.
- Reasons for different types:
    - Growing number of users.
    - Enormous growth of information resources.
    - Varied demands for specialized services.

1.21 Public Library

- A **social institution** with a major role in society's welfare.
- Factors for evolution:
  - People's urge for knowledge.
  - Literacy improvement & self-education.
  - Lifelong learning needs.
  - Community's intellectual and recreational needs.
  - Advances in science, technology, and ICT.
- Provides **quick information access** through mass media & internet.

1.22 Definition of Public Library

- A **non-profit institution**, funded mainly by public money.
- Open to all **regardless of caste, gender, class, or education**.
- Serves **five key purposes**:
  1. Education
  2. Information
  3. Recreation
  4. Aesthetic appreciation
  5. Research

1.23 UNESCO's Public Library Manifesto (1949 → revised 1972 → updated 1994 → updated July 2022)

- Provides **global guidelines** on objectives, activities, services, funding, and management.
- Missions of the Public Library:
  1. Build reading habits in children.
  2. Support formal & informal education.
  3. Enable personal creative development.
  4. Foster imagination & creativity.
  5. Promote cultural heritage & arts.
  6. Provide access to performing arts.
  7. Encourage intercultural dialogue & diversity.
  8. Support oral tradition.
  9. Ensure community information access.
  10. Offer info services to enterprises & associations.
  11. Develop information & computer literacy.
  12. Support and initiate literacy programs.
- Public libraries function as:
  - Centres for information
  - Centres for self-education
  - Centres for culture
  - Centres for local cultural materials

1.24 Objectives of Public Libraries (Ranganathan)

- Help life-long self-education of all.
- Provide up-to-date facts & information on all subjects.
- Distribute recorded information fairly & unbiased for civic duties (local, national, international).
- Convey new knowledge quickly to researchers.

- Preserve cultural heritage of the nation.
- Offer facilities for fruitful leisure use.
- Work for social well-being of citizens.

1.25 Functions of Public Libraries

- Legislated system → ensures libraries in states, districts, villages.
- Attract & engage users through:
  - Cultural activities – lectures, discussions, film shows, concerts, plays, exhibitions, story hours.
  - Serve as repositories of knowledge + cultural centres.
- Build well-informed, skilled, productive citizens.
- Examples of Public Libraries in India:

1. Delhi Public Library, Delhi
2. Khuda Bakhsh Oriental Public Library, Patna
3. Connemara Public Library, Chennai

1.26 Academic Library

- Exists within educational institutions (schools, colleges, universities).
- Users include:
  1. Students
  2. Teachers
  3. Research scholars
  4. Administrative/professional staff
- Functions differ by institution → collection, services, staffing, finance.
- Services: reading areas, lending, reference, research support.

Objectives of Academic Libraries:

- Serve academic community needs.
- Collect & store books, periodicals, references, multimedia.
- Provide reading facilities.
- Offer lending services to students, teachers, researchers.
- Provide active reference & information services.

Types of Academic Libraries:

1. School libraries
2. College libraries
3. University libraries

1.27 School Libraries

- Schools in India: **Primary, Middle, Secondary, Senior Secondary**.

Objectives of School Libraries:

- Awaken & foster **interest in reading**.
- Create **love for books**.
- Promote **reading habits**.
- Inculcate **communication skills** via storytelling, discussions, audio-visual programs, workshops.

Functions of School Libraries:

- Maintain good **teaching-learning resources** (for students & teachers).
- **Classify & display books** systematically.
- Provide proper **infrastructure** (building, furniture, equipment).
- Employ **qualified, committed staff**.

- Offer services:
    - **Lending**
    - **Reading**
    - **Reference service**
    - **Guidance & advisory service** (to develop reading interest).

Examples of School Libraries:

1. Delhi Public School Library, New Delhi
2. Kulachi Hansraj Model School Library, Delhi

1.28 College Libraries

- Types: Junior Colleges, Degree Colleges, Postgraduate Colleges, Professional Colleges.
- Students depend heavily on college libraries for self-learning due to limited personal attention from teachers.

Objectives of College Libraries:

- Provide wider & deeper understanding of subjects.
- Guide students for higher studies & self-learning.
- Prepare students for responsibilities in schools, govt., business, industries.
- Train students to become knowledgeable, enlightened, responsible citizens.
- Support preparation for professions (law, medicine, engineering, technology, etc.).

Functions of College Libraries:

- Support teaching, study & research needs of teachers & students.
- Provide building, furniture & equipment.
- Offer latest editions & multiple copies of textbooks.
- Maintain reference books & back volumes of periodicals.
- Collect multimedia & computer-aided learning material.
- Subscribe to newspapers, magazines, fiction, biographies, art books for recreation.
- Preserve previous years' question papers.

Services of College Libraries:

- Reading, lending & textbook services.
- Guidance in using catalogues (manual/computer).
- Assist in locating books & references.
- Train students to use library resources effectively.
- Provide information, reference & referral services.
- Display new arrivals & multimedia lists.
- Offer reprographic services (photocopying).

1.29 University Libraries

- Types of Universities: Conventional, Professional, Deemed, Open.
- Growth after 1947 → more students, research scholars, departments, courses, projects.
- University libraries support teaching, research, knowledge conservation & extension programmes.

Objectives of University Libraries:

- Provide intellectual & managerial leadership in fields like govt., industry, law, medicine, agriculture, etc.
- Guide research workers → apply results to improve quality of life.
- Conserve knowledge & ideas for future generations.

Functions of University Libraries:

- Build print & media collections for teaching, research & publications.
- Organize & store resources for easy access.

- Offer responsive & anticipatory information services.
- Encourage students, teachers & researchers in intellectual growth, self-discovery & skills.

Services of University Libraries:

Reading & lending service.

- Bibliographic instruction & orientation.
- Help in using catalogue & locating documents.
- Reference & information services.
- Current Awareness Services (CAS).
- Selective Dissemination of Information (SDI).
- Bibliographic services.
- Inter-Library Loan (ILL).
- Reprographic services.
- Maintain newspaper clippings, vertical files (pamphlets, reports, old question papers).
- Reservation of documents.
- User education.
- Exhibitions, displays, special lectures.
- Seminars & workshops on library use & software.

1.30 University Library Committee

- Headed by: Chief Librarian.
- Governed by statutory laws of university.
- Library system reviewed by academic & executive councils.
- Library Advisory Committee:
    - Chaired by Vice-Chancellor or nominee.
    - Librarian = Member Secretary & Convener.
    - Includes senior faculty, LIS experts & scholars.

Functions of Library Committee:

- Set guiding principles & policies for academic & administrative matters.
- Approve budget prepared by librarian (before submission to Finance Committee).
- Sources of Finance: UGC, Central/State Govt. Grants, Fees, Fines.
- Advise on:
    - Major purchases (bulk books, periodicals, e-journals).
    - Furniture, equipment, computers, communication software/hardware.
    - Acceptance of large gift collections.

Examples of University Libraries:

1. Delhi University Library
2. Jawaharlal Nehru University Library
3. Madras University Library

1.31 Special Libraries

- Emerged in 20th century.
- Serve special user groups with subject-specific collections.
- Usually attached to parent organizations (R&D, govt., industry, societies).
- Provide specialized services like technical reports, bibliographies, bulletins, abstracts, indexes.

Definition (Harrod's Glossary):

- A collection in a limited field provided by research orgs, govt., industry, societies, or even educational institutions.
- May also be a branch of public library serving special interests (e.g., music library).

Objectives:

- Support parent institution's programmes.
- Build current & retrospective collection in core subjects.
- Provide latest info promptly for specialists.
- Offer academic, technical & documentary support.

Functions & Services:

- Conduct literature search for comprehensive lists.
- Select, procure, organize, store & retrieve information.
- Analyze, synthesize & evaluate information.
- Provide:
    - State-of-the-art reports, critical reviews, monographs, research reports, reprints.
    - Indexes, abstracts, extracts.
    - Accession lists, newsletters, bibliographies, manuals, handbooks.
- Issue documents (incl. inter-library loan).
- Render reference & referral services.
- Offer CAS, SDI, Translation Services.

Types of Special Libraries & Examples:

1. **Government Libraries**
    - Parliament Library, New Delhi
    - Central Secretariat Library, New Delhi
2. **Societies & Institutions**
    - U.P. Historical Society, Lucknow
    - World Poetry Society Intercontinental, Chennai
3. **Industrial & Commercial Orgs**
    - Larsen & Toubro Library, Mumbai
    - Bharat Heavy Electricals Ltd. Library, New Delhi
4. **Research Organisations**
    - Indian Council of Medical Research (ICMR), New Delhi
    - Indian Council of Agricultural Research (ICAR), New Delhi
5. **Academic Institutions**
    - IIT Libraries (Delhi, Bombay, Chennai, Kanpur)
    - School of Planning & Architecture, New Delhi
    - LBS Institute of Management, New Delhi
6. **Public Libraries (Special Divisions)**
    - New York Public Library (Science Division)
    - Delhi Public Library (Special Collections)

Chapter 2: Library Management

2.0 Circulation Work

- Primary task of modern service libraries.
- Ensures books are actively used (not idle on shelves).
- Books can be borrowed for home reading, research cubicles, or reading rooms.
- Some materials are restricted (security/rare documents).
- Involves all tasks related to borrowing, returning, and record keeping.

2.1 Goals of Circulation Work

- Maximize availability of library materials.
- Optimize use of resources.
- Provide service with economy & efficiency.
- Use effective charging/discharging systems.
- Frame policies for lending & control of movement of books.
- Circulation division = management objective of library.

2.2 Scope of Circulation Work

Includes:

- Registration of members.
- Lending (charging/discharging) of books.
- Renewals (extension of loan period).
- Recall (asking borrower to return book).
- Holds (reservation of books already issued).
- Notification (communication with members).

Other Activities:

- Interlibrary loan services.
- Reserve book collections.
- Gate register & property counter control (as circulation desks are near entry/exit).
- Scope may vary across libraries.

2.3 Circulation Systems

- Helps library users access books/materials effectively.
- Components:
    - File of registered borrowers.
    - Record of loan transactions.
    - Charging/discharging system.
    - Renewal mechanism.
    - Reservation of books already on loan.
- Other responsibilities: shelving, maintaining statistics, collection protection.
- Aim: **remove obstacles** between user & library material.

2.3.1 Historical Development

- Evolved from **simple registers → sophisticated computer-based systems**.
- Factors:
    - Shift from **preservation → public use**.
    - Growth of **public libraries & collections**.
    - Need for **simplified & liberal procedures**.

- Charging systems grouped into:

1. Register systems
2. Card systems
3. Semi-mechanical systems
4. Automated systems

2.3.2 Register Systems

Early methods:

1. **Day Book System** – author, title & borrower's name entered sequentially.
    - Problem: tedious to trace individual records.
2. **Ledger System** – each borrower had a separate page.
    - Advantage: easier tracking than Day Book.
    - Problem: no way to locate actual book.
3. **Dummy System** – wooden/cardboard dummy placed on shelf instead of issued book; contained borrower & book details.
    - Advantage: allowed identification of borrower + book.
4. **Temporary Slip System** – slip prepared at issue with book & borrower details; arranged by date/name/reg. number.
    - Slips destroyed or given back after return.
    - Advantage: records kept at **circulation counter**, not scattered on shelves.

2.3.3 Card Systems

- Introduced as readers increased → required **identification of both book & borrower**.
- Used **two cards**: one for book, one for borrower.
- Popular systems: **Browne** & **Newark**.

i) Browne System

- Devised by Nina E. Browne in 1900.
- Used borrower's pocket (with name, address, reg. no.).
- Book card placed inside borrower's pocket → filed by date/call number/author/title.
- **Advantage**: simple, single operation.
- **Limitation**: no permanent loan record.

ii) Newark System

- Origin: Newark Public Library, USA (c.1900).
- Used borrower **card + book card**.
- **Advantages**:
    - Accurate, flexible.
    - Suitable for both small & large libraries.
    - Generates statistics, allows diff. loan periods.
- **Disadvantages**:
    - Labour-intensive.
    - Borrower details linked to item → basis for transaction numbers.

2.3.4 Semi-Mechanical Systems

- Replaced human labour with **machines**.
- Used **pre-punched cards** with holes → due date shown by cutting hole.
- Cards arranged by call number.
- **Overdue check**: knitting needle through hole → overdue slips drop out.
- **Advantage**: quick access to inventory & dates.
- **Limitation**: burden on borrower (had to write book + borrower details).

Photocharge System

- Used microphotos of borrower card + book card + due date slip.
- Slip had full details of book & borrower.
- Limitation: info only available on roll microfilm → operational difficulties.

2.3.5 Automated Circulation Systems

- Started in **1960s with computers**; expanded with microcomputers (70s–80s).
- All processes **encoded & computerized**.
- Enabled management of huge amounts of data.
- Extended beyond circulation → **cataloguing, acquisitions, DSS, library automation**.
- **Advantages**:
  - Speed.
  - Handles large data.
  - Cost of computers decreasing.
- **Status**:
  - Common in developed countries.
  - India → slower adoption but growing (esp. special, university & college libraries).

2.4 Circulation Functions

Main circulation functions include:

- User registration.
- Charging & discharging.
- Control processes (renewals, recalls, holds, overdues, notifications).
- Inter-library loan.
- Records & statistics maintenance.
- Clearance.
- Misc. functions (gate register, property counter, vigilance).

2.4.1 User Registration

- **First step** in circulation system → legitimises borrower.
- Identifies members:
  - Public library → member of community.
  - Academic library → student/faculty/staff.
- **Purposes**:
  - Enables circulation control (holds, fines, recalls).
  - Contact point to explain library rules/policies.
  - Provides statistical profile of users.
- **Procedure**:
  - Borrower fills application form (card preferred → alphabetical filing).
  - Info collected: name, address, phone, occupation, referee/guarantor (for public libraries).
  - Applicant's + guarantor's signature required.
  - Academic libraries → require ID card, admission receipt, or countersigned application (faculty → appointment letter).
- **Borrowing Privileges**: depend on type of member, document type, loan period, recall rights.

2.4.2 Charging & Discharging Functions

- **Definition**: Lending library materials + keeping records.
- **Importance**: Core service that brings users into direct contact with library operations.
- **Goals of an ideal charging system**:
  1. Identify whether book is in library or issued.
  2. Identify the borrower of any book.
  3. Show due date.

4. Maintain record of book usage.
5. Track borrower's borrowing activity (number & type).
6. Provide statistics (daily, subject-wise).

- **Records required**:
  - Document record (books on loan).
  - Borrower's record (details + borrowed items).
  - Time record (links book & borrower).
- **Operational requirements**:
  - **Speed**: quick issue & return.
  - **Economy**: minimal staff, time, cost.
  - **Accuracy**: foolproof in book tracking.
  - **Traffic flow**: no counter congestion.
  - **No backlog**: filing done same day.
  - **Low prep work**: simple system.
- **Models**:
  - **Minimal**: only borrower's records (e.g., Day Book).
  - **Complete**: covers book + borrower + time records (e.g., Dummy system).
  - **Modern**: Browne/Newark (partially complete).
  - **Computer-based**: fully meets all requirements.

2.5 Controlling Processes in Circulation

Controlling processes regulate the movement of library materials. They include:

2.5.1 Renewals

- **Meaning**: Extension of loan period → book recharged to same borrower.
- Allowed only if:
  - No demand/reserve for the same book.
  - Book must be returned immediately if recalled.
- **Method**: In person, phone, or online (depends on library policy).
- **Example**: A student borrows *"Data Structures"* for 7 days. On the due date, no one has reserved it, so the student renews for another 7 days.

2.5.2 Holds / Reserves

- **Meaning**: Request to keep a book for another user when it is already on loan.
- Process:
  - User requests → record made at circulation desk.
  - On return, book marked **"On Hold"**.
  - Notification sent to requesting user.
- **Importance**:
  - Useful in academic libraries (high-demand textbooks).
  - Helps ensure equitable access when multiple copies not available.
  - Hold requests also help decide purchase of **extra copies**.
- **Example**: Two students need *"Indian Constitution"*. One has borrowed it, the other places a hold. Once returned, it is kept aside for the second student.

2.5.3 Recalls

- **Meaning**: Library requests a borrower to return a book before due date, usually because another user needs it.
- Often linked with holds/reserves.
- **Example**: Faculty member has borrowed *"Quantum Mechanics"* for 1 month. Another student places a hold. Library recalls the book → borrower must return it within a few days.

2.5.4 Reminders / Notifications

- **Purpose**: Remind users about overdue books.
- **Reasons for delays**: Forgetfulness, selfish retention, or library's poor follow-up.
- **Method**:
  - Overdue record maintained (book, borrower name & address).
  - Printed reminders sent at intervals.
  - Faculty help sometimes sought in academic libraries.
- **Example**: A student forgets to return *"Library Science Handbook"*. Library sends an overdue notice email → student reminded to return it.

2.5.5 Fines / Overdue Charges

- **Purpose**: Discourage late returns, prevent monopoly of popular books, enforce discipline.
- **Policies**:
  - **Straight line**: Fixed fine per day (e.g., ₹2 per day).
  - **Sliding scale**: Fine amount increases or decreases with time.
  - Cumulative up to a maximum limit.
- **Collection methods**:
  - Receipts issued.
  - Conscience box (borrower deposits fine in a locked box).
- **Example**: If due date was 1st Aug and book returned on 5th Aug → fine = ₹10 (₹2 per day). In some libraries, borrower may drop this amount into a "conscience box" without receipt.

2.6 Charging Systems in Libraries

Two systems widely used in Indian libraries: Browne System and Newark System. (Here we explain Browne System in detail).

2.6.1 Browne Charging System

Devised by Nina E. Browne (Library Bureau, Boston, USA). Popular in India, less used in USA. Works on principle: Borrower's pocket + Book card = record of transaction.

i) Equipment & Materials Used

1. Registration cards – Alphabetically arranged for all members.
2. Borrower's tickets/pockets – Each borrower gets as many tickets as books allowed. Pocket (3"x2") with: Name, address, membership expiry, code, signature, librarian's stamp. Acts as ID & borrowing unit.
3. Book cards (4"x2") – Call no., accession no., author, title.
4. Book pockets (5"x3") – Pasted inside book cover to hold book card.
5. Date slip – Stamped with due/issue date, pasted inside book.
6. Date stamp and ink pad.
7. Date guide cards and charging trays – For filing transactions by due date.
8. Circulation statistics sheets – Record issue details.
9. Reminder cards, reservation cards, overdue slips.
   Example: Ramesh (borrower) has 2 pockets → he can issue 2 books. Each book's card goes into his pocket, filed under due date in the tray.

ii) Charging Routine (Issue of books)

1. Borrower presents book + borrower's ticket at counter.
2. Assistant verifies ID.
3. Book card taken from book pocket → inserted into borrower's pocket.
4. Due date stamped on date slip inside the book.
5. Book given to borrower.
6. Borrower's pocket (with book card inside) → filed in tray under due date guide.

7. Entry made in circulation statistics sheet.
   Example: Sita borrows "History of India". Its card is placed in her pocket. Due date (10th Sep) stamped in book. Her pocket is filed under "10th Sep" in charging tray.

iii) Discharging Routine (Return of books)

1. Borrower returns book at counter.
2. Assistant checks due date from slip.
3. Finds book card + borrower's pocket in tray under due date.
4. Cancels due date stamp in book.
5. Returns borrower's ticket/pocket to user.
6. Inserts book card back into book pocket.
7. If overdue → fine slip issued → borrower's ticket returned only after fine paid.
   Example: Sita returns "History of India" on time → her pocket is retrieved, card placed back in book → book discharged. If she is 2 days late, a fine slip is made (e.g., ₹4) before returning her ticket.

iv) Reserves (Holds)

Reserved books marked in tray. When returned, instead of restoring to shelves, book is kept aside for next user. Notification sent.

Example: Rahul reserves "Organic Chemistry". When returned by another borrower, it is set aside with a "reserved" slip and Rahul is informed.

v) Advantages of Browne System

Simple, economical. Easy to operate. Suitable for small/medium libraries. Immediate identification of borrower with book.

Example: In a college library with 300 students, Browne system helps staff easily track who borrowed what without computer support.

vi) Disadvantages of Browne System

No permanent record of past issues. Handling large volumes is time-consuming. Risk of misfiling pockets/cards. Statistics not easily generated.

Example: If a book is lost, tracing the last borrower is difficult since records are temporary.

vii) Specimen of Materials (Simplified)

1. Date slip – "Issued: 1 Aug | Due: 15 Aug"
2. Book pocket – Glued inside cover.
3. Book card – Call No: 320.1 | Acc No: 12345 | Title: Political Theory
4. Borrower's pocket – Name: Ramesh | No. 25 | Valid: Dec 2025

vii) Specimens of the materials: Browne Charging System

1) Date slip (Refer to 10.5.1 subsection (i) e)

CALL NO.		ACC. NO.
NAME OF THE LIBRARY		
The following books were issued/are due in the below mentioned dates		
Date of Issue/ Due date	**Date of Issue/ Due date**	**Date of Issue/ Due date**

Size: 12.7cms × 7.6cms

Source: IGNOU Books : https://egyankosh.ac.in/bitstream/123456789/33068/1/Unit-10.pdf

2.6.2 Newark Charging System

More elaborate than Browne System; requires more equipment and is slightly more time-consuming.

i) Equipment & Materials Used

1. Registration files – Alphabetical file of applications (with borrower details) and numerical file with registration numbers.
2. Borrower's cards – Name, address, registration number, space to record transactions.
3. Book cards – Call number, author, short title.
4. Date slips – Pasted inside book for issue/return dates.
5. Book pockets – Carrying book's bibliographic details.
6. Pencil, dater, date stamp, ink pad.
7. Date guide cards – For filing daily circulation.
8. Fine record slips.
9. Circulation statistics sheets.
10. Overdue reminder cards, reserve cards, etc.
    Example: Ramesh (Reg. No. 102) has a borrower card. "History of India" has a book card + date slip + pocket.

ii) Charging Routine (Issue of books)

1. Borrower presents card + book.
2. Due date stamped on book's date slip.
3. Same due date stamped on book card and borrower's card.
4. Borrower's number written opposite date on book card.
5. Book card filed behind correct due date guide.
6. Borrower gets back his card + book.
    Example: Sita (Reg. No. 210) borrows "Organic Chemistry." Due date (10 Sep) is stamped on her borrower card, book slip, and book card. Book card filed under "10 Sep" in tray.

iii) Discharging Routine (Return of books)

1. Borrower presents book + borrower's card.
2. Return date stamped on borrower's card (cancels previous charge). Card returned to borrower.
3. Book card located in circulation tray → replaced in book pocket.
4. If overdue, fine is calculated; return date stamped only after fine is paid.
    Example: Rahul returns "Political Theory" on time → his card stamped with return date. If late by 3 days, fine is noted before stamping.

iv) Reserves (Holds)

Reserve ticket filled by reader → attached to borrower's card in tray. When reserved book is returned, reserve card + book card pinned to borrower's card. Book set aside in reserved sequence. Reader notified.
Example: Priya reserves "Microbiology." Once returned, the reserve card is pinned with her borrower card → book kept aside → Priya informed.

v) Advantages of Newark System

1. Provides permanent record of borrowings (unlike Browne).
2. Easier to trace borrower of a lost/damaged book.
3. Reservation procedure simpler.
    Example: If a book is lost, librarian can check borrower's card + book card record to trace borrower.

vi) Disadvantages of Newark System

1. More elaborate → needs more materials and time.
2. Charging and discharging process slower than Browne.
3. Handling large volume of records may be tedious.
    Example: In a busy university library, issuing 200 books in peak hour becomes time-consuming.

2.7 Specimens of Materials (Simplified)

1. Borrower's card – Name: Ramesh | Reg. No. 102 | Books Issued: "History of India" (Due: 15 Aug).
2. Book card – Call No: 320.1 | Title: Political Theory | Acc No: 5678.
3. Date slip – "Issued: 1 Aug | Due: 15 Aug."
4. Reserve slip – "Book Reserved by Priya | Title: Microbiology."

2.7.2 Circulation Management

1. Circulation = ongoing activity, must adapt with library environment.
2. Charging systems reviewed periodically in view of technology changes.
3. Modern management techniques used for evaluation:
    - Cost-benefit analysis → balance costs vs advantages.
    - System study → identifies efficiency, suitability.
4. Factors considered: capital equipment, labour, materials vs patron satisfaction, efficiency, economy, statistics.

2.7.3 Records and Statistics

1. Records essential → basis for statistics on:
    - Number of loans.
    - Types of users + borrowing patterns.
    - Frequency of title use.
    - Defaulters.
2. Uses of statistics:
    - Guide acquisition policy.
    - Decide services to provide.
    - Understand user range/type.
    - Prepare annual library reports.
3. Registers maintained: patron register, interlibrary loan register, overdues & fines register, suggestions register, gate register.

2.7.4 Miscellaneous Jobs

1. Circulation desk near entrance → additional responsibilities.
2. Gate Register:
    - Records daily visitors & purpose.
    - Useful for analysis of library patrons.
    - Limited value in colleges/universities (same users daily).
3. Property Counter:
    - Users not allowed to bring personal belongings/books inside.
    - Belongings kept at property counter near entrance.
    - In small libraries, staff may also act as security/vigilance to prevent theft of books.

2.8 Stack Maintenance

Maintenance work = organisation of stack rooms, arrangement of books on shelves, conservation. Includes:

- Preparation & maintenance of guides
- Shelf rectification
- Shelf register/list maintenance
- Maintenance routines
- Tools needed

2.9 Stack Guides

1. **Tier Guide** – each tier shows subjects + inclusive class numbers with headings.

2. **Gangway Guide** – each gangway shows subjects covered with class numbers + headings.
3. **Bay Guide** – each bay of shelves has class numbers + headings.
4. **Shelf Guide** – each shelf shows class numbers of subjects.
5. **General Guide** – overall view of stacks + arrangement, placed in lobby/entrance.
6. **General Instruction Guides** – notices for users, e.g.: No Smoking Please, Talk and Walk Softly, Silence Please, Do not shelve books (leave on table).

2.10 Shelf Register / Shelf List

- Shelf list = record of all books, shows exact **position of books on shelves**.
- Maintained on **standard size cards** arranged parallel to book arrangement.
- Multiple sequences = multiple groups of shelf list cards.
- Helps in:
    - Keeping books in **correct sequence**.
    - Finding the position of any book.
    - Stock verification (acts like a stock register).
- Must be kept **safe & up-to-date**.
  Example: If a book "History of India" is missing from the History shelf, the shelf list card will show whether it is in the stack, issued, or misplaced.

2.11 Maintenance Routine

Day-to-day duties of maintenance staff:

1. **Dusting & Cleaning** – shelves must be free from dirt (vacuum cleaners used in big libraries).
    - *Example:* A reader shouldn't complain of dust on bookshelves in a university library.
2. **Shelving New Books** – books from processing section are displayed for a week on *Latest Additions Shelf* before moving to stacks.
    - *Example:* A new novel arrives → displayed for 7 days → shifted to Literature section.
3. **Shelving Returned Books** – returned books must go back same day for others' use.
    - *Example:* If a student returns a Chemistry book in the morning, it should be re-shelved the same day.
4. **Shelf Study & Rectification** – staff studies contents, notices misplaced books, restores order.
    - *Example:* A Physics book found in Mathematics section must be shifted back immediately.
5. **Damaged / Mutilated Books** – identify torn, mutilated books → send for mending/rebinding.
    - *Example:* A Geography atlas with torn maps should be repaired before reissuing.
6. **Shifting / Reshifting Books** – rearrange shelves to match **popularity & growth** of subjects. Done once in 5 years.
    - *Example:* Computer Science books increase → shift to a bigger shelf space.
7. **Assistance to Readers** – help users locate books when they cannot find them.
    - *Example:* A staff member helps locate "Organic Chemistry" if student can't spot it.
8. **Maintenance of Book Tags** – call numbers on spines/book bottom; replace/refix if damaged.
    - *Example:* If the tag of "Psychology Today" is faded, replace to maintain order.

2.12 Stock Verification

- **Meaning**: Physical check of library books to ensure all acquired items are accounted for.
- **Purpose**: Not just counting but also assessing the condition & completeness of collection.
- **Issue**: Librarians often blamed for losses (theft, misplacement) while security facilities are lacking.
  Example: Like a shopkeeper checks inventory of goods, libraries check books in stock.

2.13 Need for Stock Verification

- **Accountability**: Ensures collection is complete & no theft/loss.
- **Identify Defects**: Highlights admin lapses & staff slackness.
- **Planning**: Helps know which books are damaged/missing → guides replacement.
- **Large Libraries**: Full check is tough → use **sample verification** section by section.
  Example: A national library may verify only the "Science" section in one year and "Arts" section the next.

2.14 Methods of Stock Verification

i) By Accession Numbers

- Accession numbers read aloud → checked against accession register.
- Missing numbers = lost books.
- Problems: very slow, damages register, needs duplicate register/slips.
- Risk: cheap book may be substituted under same number (fraud risk).
  Example: Accession No. 4567 is missing in register → librarian knows book is lost.

ii) Numerical Counting Method

- Count all books on shelves + those issued.
- Compare with total records.
- Only gives *number of lost books*, not exact titles.
- Limited use.
  Example: Records say 50,000 books; only 49,850 counted → 150 missing, but unknown which titles.

iii) Shelf List Method

- Requires **up-to-date shelf list cards**.
- Cards compared directly with books on shelves.
- Missing books' cards separated.
- Can distribute trays to staff for parallel work → faster process.
- Most efficient method.
  Example: Shelf list card for "Modern Physics" is missing → confirms book is lost.

2.15 Advantages of Stock Verification

- **Replacement**: Identifies lost books → library can replace them.
- **Popular Books**: Shows which titles are frequently used (though not always course-related).
- **Staff Knowledge**: Staff become more familiar with books.
- **Cleaning & Order**: Ensures dusting, rearrangement, and neat shelves.
- **Book Repair**: Helps spot worn-out/damaged books for repair/rebinding.
- **Records Update**: Keeps catalogue & records accurate.
- **Efficiency Check**: Reveals vigilance level of staff.
  Example: During verification, staff finds "Physics Handbook" missing but also notices "Chemistry Manual" damaged → replacement + repair planned.

2.16 Disadvantages of Stock Verification

- **Work Disturbance**: Normal routine disrupted.
- **Reader Inconvenience**: Users can't access certain books during stock taking.
- **Resource Heavy**: Seen as waste of time, money, energy.

- **Incomplete Truth**: Some missing books may never be traced → results not fully reliable.
  Example: In a college library, students complain as half the books in the reading room are unavailable during annual stock check.

2.17 Loss of Books

- **Open Access**: More theft as users browse freely.
- **Closed Access**: Not immune, since even staff may steal.
- **Reasons**:
  a) Habitual thieves.
  b) Poor vigilance → easy theft.
  c) Strict rules → users steal restricted books/journals.
  d) Possessive readers ("book lovers").
  e) No proper security policy.
  f) Wrong assumption that staff never steal.
  Example: In many academic libraries, journal issues are found with missing pages because students tore them out instead of borrowing.

2.18 Responsibility for Book Losses

- **Western Countries**: Librarians not held personally responsible.
- **India (Earlier)**: Librarians blamed, but professional associations changed the policy.
- **Standard Practice**: Normal loss of **3 books per 1,000 circulated** is acceptable and can be written off.
  Example: If 1,00,000 books are issued in a year, losing around 300 books is considered normal and not negligence.

2.19 Measures to Minimise Book Losses

Libraries must balance **access** with **security**. Key measures:

1. **Collection Security**
   - Restricted/closed access, guards, stamping, tagging, locked storage.
   - User identification, book-drop checks.
     Example: Delhi University library stamps all books to prevent easy resale of stolen items.
2. **Cash Security**
   - Cash box, registers, handling rules, accountability.
3. **Computer/Data Security**
   - Password protection, backups (including off-site storage), duplicate records (microfilm/digital).
4. **Building & Key Security**
   - Issue/return procedure for keys, change locks, alarms, lighting, window security.
5. **Liability & Insurance**
   - Library stock insurance against theft/damage.
6. **Reader-Friendly Services**
   - Affordable photocopying, extended reading hours (especially exam time) to reduce temptation to steal.

Example: A library introduces electronic theft-detection gates but also provides cheap photocopying, so students don't feel forced to tear pages from books.

2.20 Withdrawal

A book is withdrawn from the collection/stock register/shelf list when:

- It is **outdated** (e.g. old syllabus textbooks, outdated medical books).
- It is **worn out** beyond repair.
- It is **reported lost** during stock verification.
- It is **damaged** and unusable.

Procedure for Withdrawal:

1. Match shelf list card with the book.
2. If **only one copy** exists:
    - Reorder the item **or**
    - Discard the item and all catalogue records/cards.
3. If **multiple copies** exist:
    - Mark withdrawn copy as *"lost/damaged/withdrawn"* on the main card.

Example: If a library has 3 copies of *Physics for Engineers* and one is torn beyond repair → mark as "withdrawn" in records while keeping the other two.

2.21 Weeding

Weeding = removing **outdated, less-used, or irrelevant books** to keep the collection fresh and useful.

- Needed because some books become outdated (e.g. statistics, scientific discoveries, old law editions).
- Not all old books are valuable in every library → careful selection required.

Steps in Weeding:

1. Arrange such books in proper order.
2. Collect relevant catalogue records.
3. Insert a **disposition slip** in each book to be withdrawn.
4. Maintain a **tabular record** of weeded/withdrawn books.
5. Obtain **approval of parent body/authority** before final withdrawal.

Example: An economics library weeds out books with data before 1991 economic reforms in India, since statistics are outdated.

2.22 Library Budget and Financial Planning

- **Definition**: Budgeting = planning process of estimating income & expenditure for a specific period (usually 1 year). It is a **financial statement + plan document**.
- **Purpose**: Ensures expenditure ≤ income, helps in financial control, coordination, and proper resource utilisation.
- **Nature**: Budget is **future-oriented** (estimate), while financial report is **past-oriented** (factual record).

Advantages of Budgeting:

1. Clarifies goals.
2. Fixes responsibility.
3. Reveals weaknesses in organisation.
4. Forces quantification of targets.
5. Ensures productive resource use.
6. Helps timely corrective action.

Limitations/Problems:

1. Emphasis on observable factors (e.g. circulation).
2. May encourage routine without improvement.

3. Library services not fully quantifiable in money terms.
4. Requires constant adaptation.
5. Does not work automatically.
6. Needs intelligent use.

Functions of Library Budget:

- **Control**: Regulates expenditure as per financial rules.
- **Communication**: Informs staff about total outlay & allocations.
- **Coordination**: Shares expenditure among units, maximises fund use.
- **Evaluation**: Assesses performance based on fund utilisation.
- **Motivation**: Encourages staff by providing funds for approved activities.

Key Point: Budget = **future financial plan**, Financial Report = **past financial performance**.

2.23 Budgetary Methods

Every library operates with a budget. The librarian and senior staff prepare it, the Library Committee vets it, and higher authorities approve it. Different **budgeting methods** are used:

i) Line-Item / Incremental / Historical / Object-of-Expenditure Budgeting

- Most common, traditional type.
- Expenditure divided line-by-line (books, journals, salaries, equipment, contingencies).
- Based on past year's allocation with a small increase (5–10%).
- **Advantages**: Easy to prepare, present & understand; ensures funds used for stated purposes.
- **Limitations**:
    1. No future projection.
    2. Rigid – funds cannot be shifted across heads.
    3. Emphasises items/tools, not services.
    4. Encourages inflated demands.
    5. Lacks accountability & forward planning.

ii) Formula Budgeting

- Based on financial norms/standards (e.g., users served, academic programmes, ratio of book stock to funds).
- Uses formulae for quick estimation & justification.
- **Advantages**: Simple, broad, saves time.
- **Limitations**: Does not consider variations in library size, services & customer needs.

2.25 Programme Budgeting

- Origin: Hoover Commission Report (1949).
- **Steps**:
    1. State library objectives.
    2. Consider alternative ways.
    3. Select best option (effectiveness & efficiency).
- Focus: *For what purpose is money spent?* and *How should resources be deployed?*
- Budget presented as **programmes & sub-programmes** (built on measurable work units).
- Example: Current Awareness Service → cost estimated for staffing, materials, overheads.
- Library functions grouped: admin services, technical services, reader services, etc.
- **Advantage**: Links funds directly to activities/services.
- **Limitation**: Requires measurable work units → sometimes difficult in service institutions.

2.26 Performance Budgeting

- Extension of programme budgeting → focus on **performance & operational efficiency**.
- Based on **quantitative data** (books acquired, catalogued, man-hours, etc.).
- Uses management tools (e.g., cost-benefit analysis).
- Budget = Unit cost × Anticipated volume of operations.
- **Advantage**: Stresses efficiency & service mission.
- **Limitations**:
    1. Hard to measure quality of services.
    2. Benefits of libraries cannot be fully expressed in money.
    3. Complex cost relationships.
    4. May lead to excessive scrutiny of each operation.

2.27 Planning Programming Budgeting System (PPBS)

- **Origin**: Proposed by US Department of Defense (1961).
- **Key elements**: Budgeting + Systems Analysis.
- Extension of **Programme & Performance Budgeting** → combines **planning + measurement**.
- **Steps**:
    1. Establish goals & objectives.
    2. Formulate programmes/services.
    3. Translate into tangible projects & budget terms.
- **Advantages**:
    - Provides rational basis for comparing costs & benefits.
    - Combines planning, programming & budgeting.
    - More systematic & comprehensive.
- **Limitations**:
    - No standard for measuring programme effectiveness.
    - Focus on *what* not *how*.
    - No clear tool for operations.
    - Weak in evaluating impact of different funding levels.
    - Focuses on new programmes → ignores continuous evaluation of existing ones.

2.28 Zero-Base Budgeting (ZBB)

- **Origin**: Developed by Peter Phyrr (1970s).
- **Concept**: Opposite of historical budgeting. Each year, budget starts from **zero**.
- No automatic continuation of previous year's programmes.
- Managers must justify *every* activity & budget request from scratch.
- **Steps in ZBB**:
    1. Break programmes into lowest-level activities.
    2. Examine objectives & alternatives.
    3. Prepare "Decision Packages" with purpose & cost.
    4. Rank decision packages.
    5. Select up to the cut-off (within total budget).
- **Advantages**:
    - Improves planning & budgeting.
    - Builds strong management team.
    - Prevents wasteful continuation of outdated programmes.
- **Limitations**:

- Time-consuming & requires expertise.
- Difficult to develop & rank decision packages.
- Administrative burden → limited adoption in libraries.

2.29 Budgetary Norms and Standards

- **Purpose**: Basis for estimating financial requirements, seeking/justifying funds, and allocating expenditure.
- **Methods of estimating funds**:
  i) Per capita method
  ii) Proportional method
  iii) Method of details

2.30 Distribution of Budgetary Funds (Ranganathan's Suggestion – University Libraries)

- Staff: **50%**
- Books & Reading Materials: **40%**
- Miscellaneous: **10%**

2.31 UGC Library Committee Suggestion

- Example: University with 5,000 students & 500 teachers/research fellows → Budget Rs. 3,50,000.
- Books/Journals/Materials: Rs. 1,75,000 (50%)
- Staff: Rs. 1,75,000 (50%)
- Trend: Salaries usually higher than books.

2.32 General Norms (University Libraries)

- Salaries & Allowances: **50%**
- Books: **20%**
- Periodicals: **13%**
- Binding: **7%**
- Others (supplies, maintenance etc.): **10%**

2.33 General Norms (Public Libraries)

- Salaries & Allowances: **50%**
- Books: **20%**
- Periodicals & Newspapers: **5%**
- Binding: **5%**
- Others: **20%**

2.34 Observations on Budgeting Trends

1. Services should be **user-oriented**; needs must be systematically assessed.
2. Budgets must align with **need-based services**.
3. **Unit cost of operations** should be calculated, cost accounting essential.
4. Rising cost of books, journals & staff salaries → question of **free vs. charged services**.
5. Some services (CAS, SDI, bibliographies, document supply, literature search) may be **priced/subsidised**.
6. Indian libraries depend mostly on **appropriated funds** without scientific allotment.
7. Need for **innovative budgeting** in tune with new demands.

2.35 Preparation of Library Budget

- **Responsibility**: Chief librarian (overall coordination & accountability).
- **Delegation**: Section/department heads may assist, but chief librarian remains responsible.
- **Timing**: Budget Estimates (BE) for next year & Revised Estimates (RE) for current year are prepared usually mid-financial year.
- **Basis**: Past expenditure, present demands, future needs.

2.36 Factors Considered in Budget Preparation

1. Previous year's actual expenditure.
2. Spillovers from previous allocations.
3. Expenditure till date in current year.
4. Foreign exchange (FE) needs (for foreign journals/books).
5. Advance commitments for next year.
6. Capital items (building, furniture, equipment).
7. Inflationary trends (books, journals, binding, supplies).
8. Enrolment increases.
9. Annual salary increments.
10. Technological developments (impact on economy & efficiency).

2.37 Budget Discussion & Finalisation

- Chief librarian consolidates proposals.
- Discussion with sectional/department heads before submission.
- Final budget submitted in **institution-approved proforma**.

2.38 Proforma Types (Academic Libraries – Historical Budget)

1. Schedule of expenditure on staff salaries.
2. Schedule of expenditure on all other items.

2.39 Schedule of Expenditure on Staff Salaries (Heads)

1. Serial number
2. Designation
3. Pay scale
4. Basic pay (on 1st April)
5. Total (12 months)
6. Date of increment
7. Rate of increment
8. Amount of increment
9. Dearness pay (rate & amount)
10. Dearness allowance (rate & amount)
11. House rent allowance
12. Contribution to GPF/CPF
13. Honorarium (if any)
14. Interim relief (if any)
15. **Grand total** (summing all amounts)

2.40 Schedule of Expenditure on Other Items (Heads)

- Establishment

- Salaries
- Allowances
- Provident fund/gratuity contribution
- Other recurring expenditure
- Binding
- Stationery
- Postage
- Contingency
- Books, periodicals & back sets
- Non-recurring expenditure
- Building construction/expansion
- Building maintenance
- Furniture (purchase/repair)
- Equipment
- Temporary staff for special work
- Special collections

2.41 Time Linkage in Library Budget

Budget shows data for **three years**:

1. **Last year** → Actual expenditure
2. **Current year** → Estimated + Revised expenditure
3. **Next year** → Estimated expenditure

2.42 Contents of a Budget Document

- **Official nature** → Seen by administrative & financial authorities.
- **Qualities** → Self-contained, clear, justified, neat, well-organised.
- **Every expenditure item** → Linked with past allocations & present justifications.

Format of Budget Document

1. **Title Page** → Budget estimates for the year.
2. **Contents**
3. **Executive Summary** → Brief synopsis.
4. **Budget at a Glance** → Quick overview of allocations.

Part I

- Goals & objectives of the library.
- Activities & achievements of previous year.
- Anticipated activities & proposed targets for coming year.
- Future perspectives.

Part II – Budgetary Estimates (detailed heads)

- Salaries & allowances.
- Books & journals.
- Databases.
- Library/documentation/information services.
- Equipment.
- Software & hardware.
- Stationery, postage.
- Building maintenance.
- Contingencies.
- Miscellaneous.

2.43 Principles of Budget Making

1. **Library participation** → Librarian should be invited to prepare budget after consulting departmental heads & staff.
2. **Adequacy of funds** → Sufficient in each head to support growth & development.
3. **Consideration of factors** → Expenditure, income, inflation, foreign exchange, salary hikes, insurance, utility charges, delays.
4. **Timeliness** → Budget prepared & submitted on time for smooth recruitment, ordering, and planning.
5. **Educational alignment** → Should reflect educational goals, curricular changes, new courses, rising costs.
6. **Flexibility** → Categories should allow adjustments & easy financial monitoring.
7. **Sources of Finance** →
    - Regular grants (parent organisation/govt.)
    - Ad hoc grants/subsidies
    - Fines, fees, service charges.
8. **Heads of Expenditure** →
    - Collection (books, journals, reports).
    - Binding & maintenance.
    - Furniture & equipment.
    - Building.
    - Salaries & wages.
    - Stationery, postage, etc.
9. **Complexity of budget** → Depends on library size & nature of parent institution. May vary from simple fixed grant to multi-source complex funding with restrictions.
10. **Allocation basis** → By heads, material type, subjects, or departments.

2.44 Fund Accounting

- **Definition** → Systematic maintenance of income & expenditure records for proper use of library funds.
- **Purpose** →
    - Ensure correct spending within limits.
    - Aid in planning future budgets & studies.
    - Track expenditure for accountability.
- **Types of Funds**:
    - **Operating Fund** → Main library fund.
        - **Restricted fund** → Can be used **only** for specified purpose.
        - **Unrestricted fund** → Flexible use beyond specified purpose.
- **Principle** → Every transaction must be charged to an account, with record for verification.
- **Functions of Fund Accounting** →
    - Shows amount spent, balance, and commitments.
    - Supports budgetary control & continuous review.
    - Prevents under-spending or over-spending.
    - Guards against misappropriations & maladjustments.
- **Requirement** → Librarian should consult finance section before setting up bookkeeping system.

2.45 Financial Records

- **Need** → Libraries must follow sound business & accounting practices.
- **Control** →

    - Library account usually maintained by central finance office.
    - Library maintains records of outstanding orders, forwarded bills, etc.
- **Purpose of Accounting →**
    - Keep expenditures within budget.
    - Prepare annual report & budget.
    - Provide factual basis for decisions.
    - Help departments use funds systematically.
    - Supply data for reports & surveys.
- **System Used** → Mostly **single-entry system** in libraries.
- **Principles** → Records must be:
    - Simple & efficient.
    - Allow easy & quick checking with office ledgers.
- **Common Records Maintained** → Outstanding orders, payments, bills, commitments, etc.

2.46 Cash Book

- Record of daily **cash transactions** (income & expenditure).
- Often not maintained by librarian, since most transactions go through admin office.
- Libraries handling contingency funds usually keep a cash book.

2.47 Ledger

- Shows **budget provision/income at the top** and detailed expenditure headwise.
- Used for keeping track of actual spending against provision.

2.48 Allocation / Allotment Register

- Maintains accounts **headwise & subjectwise** (e.g., books, periodicals, stationery).
- Shows: provision, expenditure, commitment, and balance available.
- Purpose is similar to ledger but more detailed & subject-focused.

2.49 General Invoice Register / Bill Register

- Serial numbers given = **voucher numbers**.
- Office copy of each bill is filed by voucher number.
- Helps trace any bill or payment quickly.

2.50 Monthly Expenditure Statement

- Prepared at the end of each month.
- Shows grant position of each expenditure head.
- Keeps track of spending vs. allocation regularly.

2.51 Salary Bill Register

- Detailed record of **salaries & deductions** of library staff.
- Prepared by accounts section, except leave records (maintained by librarian).

2.52 Petty Cash Record

- Two ways of handling:
    1. Fine & replacement money → directly turned into petty cash.
    2. Money collected by accounts office → later transferred to library as petty cash.

2.53 Equipment Record / History Card

- Maintains details of major equipment (duplicate copies in admin office & library).
- Information: item name, purchase date, cost, serial no.
- Helps in replacement/repairs, insurance, and inventory.

2.54 Book Selection – Meaning

- Essential for all libraries (public, academic, special).
- Involves expertise, judgment, and intuition.
- With e-resources and online acquisition, selection and acquisition now integrated.

2.55 Importance of Book Selection

- Ensures **useful books** are bought within limited funds.
- Must meet library's aims & objectives.
- Prevents indiscriminate acquisition.
- Helps serve the **information needs** of maximum users.

2.56 General Principles of Book Selection

- Based on collection development goals & user needs.
- Should follow written **collection development policy** or established norms.
- Consortia decisions now influence selection (due to high cost of e-resources).

2.57 User-Centric Philosophies

- **Ranganathan's Laws**:
    1. Books are for use.
    2. Every reader his/her book.
    3. Every book its reader.
- **Drury's Principle (1930)**: Right book, right reader, right time.
- **McColvin's Demand & Supply Theory (1925)**: Selection must be linked to demand.
- **Melvil Dewey**: Best reading for largest number at least cost.

2.58 Drury's Principles of Book Selection (1930)

1. Provide right book, right reader, right time.
2. Study community needs.
3. Set suitable standards for judging books.
4. Duplicate best books rather than acquire too many average ones.
5. Select for positive use – must be serviceable.
6. Stay within budget with fair allotments.

2.59 Dewey's Principles

- Best books = satisfy users' demand for **recreation, knowledge, study**.
- Documents must meet **social & cultural needs**.
- Aim: maximum satisfaction for maximum readers at least cost.

2.60 Ranganathan's Contribution to Selection Principles

- **First Law**: Only useful books should be selected.
- **Second Law**: Selection must cater to all users.
- **Third Law**: Anticipate and meet future needs of users.

2.61 Book Selection Policy – Meaning

- Libraries need a **balanced collection** of both **print & e-resources**.
- Policy ensures: relevance, quality, cost-effectiveness, and user needs.
- Joint responsibility of **faculty + librarians**.

Example: A medical college library framing a policy to buy latest medical journals, e-databases like *PubMed*, and relevant textbooks.

2.62 Factors Affecting Selection Policy

1. Explosion of literature → hard to cover everything.
2. Increased cost of paper, printing, binding.
3. Demand for **multi-disciplinary publications**.
4. Rising cost of foreign books (currency fluctuations).
5. Reduction in grants → limited funds.
6. Joint acquisition for e-resources (consortia).
7. Staff-user interaction improves relevance.
8. Staff training for handling multimedia resources.

Example: A university library joining *INFLIBNET* consortium to access e-journals at lower cost.

2.63 Basis of Selection (General Policies)

- Library objectives & aims.
- Users' requirements.
- Existing holdings.
- Authority & accuracy of resources.
- Cost vs. value.

Example: Law library giving priority to *Supreme Court Cases (SCC Online)* database instead of general magazines.

2.64 Priority Areas of Selection

1. Chronological: Current & retrospective works.
2. Subject: Courses & research areas.
3. Levels: School, UG, PG, Research.
4. Geographical: Local to international.
5. Language: Instructional & regional languages.
6. Media: Print + Non-print (CDs, DVDs, digital, microforms).

Example: A university buying both Hindi translations of science books (regional coverage) and latest English e-journals (international coverage).

2.65 Guidelines (Do's & Don'ts)

Do's

- Select from **standard catalogues**.
- Choose books reviewed in 2+ sources.
- Justify controversial selections.
- Buy items of **lasting literary/social value**.
- Prefer **paperback** over costly hardbound.
- Place **standing orders** for annuals, directories.

- Prioritize latest editions.
- Try 30%+ discount on remaindered books.
- Follow **Good Offices Committee Recommendations (GOCR)** for pricing.
- Ask for **original invoices** of foreign books.

Don'ts

- Avoid negatively reviewed or sensational books.
- Avoid duplication (unless high demand).
- Avoid outdated materials.

Example: Selecting *Oxford English Dictionary (Latest Ed.)* instead of multiple outdated dictionaries.

2.66 Tools for Book & Journal Selection

1. **Printed Books**:
    - *Books in Print*, *Cumulative Book Index*, *National Bibliography*.
    - Publisher Catalogues (e.g., *Oxford University Press*).
    - Reviews in newspapers (*The Hindu Book Review*, *Times Literary Supplement*).
2. **Journals**:
    - *Ulrich's Periodicals Directory*.
    - *Science Citation Index*.
    - *Guide to Indian Periodicals*.
    - Journal publisher catalogues.
3. **E-Resources & Databases**:
    - *Global Books in Print*, *Amazon*, *Flipkart*.
    - Publishers' websites & RSS feeds.
    - Book fairs (Delhi Book Fair, World Book Fair).
4. **Government Publications**:
    - *Publication Division, Govt. of India*.
    - Agencies like *Bookwell*, *Jain Book Agency (Delhi)*.

Example: Library uses *Ulrich's Directory* to check whether a new research journal is peer-reviewed before subscribing.

2.67 Criteria for Selection of Books

- Price & format (hardcover, paperback, e-book).
- Authority of author/publisher.
- Importance of subject matter.
- Accuracy of information.
- Value & quality.
- Importance to total collection.
- Current & permanent value.
- Relation to other materials in library.

Example: A history library selecting *India's Struggle for Independence by Bipan Chandra* because of its authoritative content and relevance to other history books.

2.68 Criteria for Reference Materials

- Authority: author's credentials & publisher's reputation.
- Scope & purpose of the work.
- Treatment of subject (depth/clarity).
- Arrangement & format.
- Indexing and bibliographic value.

- Comparison with other tools.

Example: Choosing *Encyclopaedia Britannica* over a lesser-known encyclopedia due to its scope, authority, and indexing.

2.69 Criteria for Textbooks

- Applicability to course of study.
- Clear objectives in preface/introduction.
- Table of contents for coverage.
- Organisation of information.
- Index, appendix, glossary for easy use.
- Physical quality (printing, binding).

Example: Selecting *NCERT Physics Textbook* for high school instead of a foreign edition to match syllabus and affordability.

2.70 Criteria for Periodicals (Magazines/Journals)

- Subject coverage & authenticity.
- Accuracy of information.
- Organisation & continuity of publication.
- Indexing, abstracting & bibliographic value.
- Reviews in reputed sources.

Example: Subscribing to *Nature* journal because of its international reputation, indexing in *Science Citation Index*, and relevance to researchers.

2.71 Criteria for Electronic Resources

- Most libraries provide e-resources directories via subject guides.
- Searchable on Google & publishers' portals.
- Evaluation involves: subject coverage, specialization level, currency, language, formats (print/e-print/audio).

Example: University library subscribing to *IEEE Xplore Digital Library* for engineering students due to wide subject coverage and updated research.

2.72 ODLIS Definition of Evaluation

- Evaluation = applying standards to decide if an item should be added.
- Factors: subject coverage, specialization level, editions, currency, languages, formats.
- Influenced by: library's mission, user needs, budget, reviews, core lists, selection tools.

Example: Public library avoiding an expensive foreign magazine that does not serve its local readers despite good reviews.

2.73 Methods of Evaluation

1. Collection-Based – Focus on evaluating titles/resources directly.
2. User-Based – Focus on what users demand and use.

2.74 Collection-Based Evaluation Criteria

1. **Content & Subject** – Scholarly nature, scope, depth, uniqueness.
    - *Example:* Consulting faculty before buying a specialized textbook like *Advanced Quantum Mechanics*.
2. **Currency** – Check date of publication, edition, update frequency.

    - *Example:* Buying *Current Medical Diagnosis and Treatment (2024 ed.)* instead of older editions.
3. **Veracity** – Authority, credentials, publisher reputation.
    - *Example:* Choosing *Oxford Handbook of Clinical Medicine* because of reputed authors and publisher.
4. **Other Factors** – Writing style, geographic coverage, physical quality, uniqueness, user level, cost vs. quality.
    - *Example:* Avoiding a costly imported book if a local edition provides the same content at lower price.

2.75 Conspectus Method

- Developed in 1979 by Research Libraries Group (RLG).
- Ensures uniform collection evaluation & facilitates resource sharing.
- Levels: (i) Out-of-scope (not collected), (ii) Minimal level (basic works only), (iii) Basic information level (general sources like dictionaries, surveys, bibliographies), (iv) Instructional support level (UG/PG study, monographs, representative journals), (v) Research level (advanced research materials, specialized monographs, extensive journals), (vi) Comprehensive level (exhaustive special collection including manuscripts, dissertations, rare items).

2.76 Circulation Statistics

- Uses usage data from circulation records to evaluate collection demand.
- Helps in policy review, space allocation, offsite storage, funding, deselection.
- Example: High circulation in engineering books → more funds allocated to engineering collection.

2.77 Collection Mapping

- Examines resources in a subject both quantitatively & qualitatively.
- Identifies strengths & weaknesses for further collection development.
- Example: Science section strong in physics, weak in chemistry.

2.78 Checklist Method

- Oldest evaluation method (first used in 1849 by Charles Jewett, Smithsonian Institute).
- Compares library's holdings against a standard list of notable works.
- Reveals collection gaps & missing core resources.
- Also doubles as collection development tool.

2.79 User Studies & Usage Data

- Involves surveys, interviews, feedback from users.
- Evaluates adequacy, relevancy, preferred formats, non-use of materials.
- Helps adapt collections to user needs.
- Example: Students prefer e-resources over print journals.

2.80 Citation Analysis

- Bibliometric method examining works cited in publications.
- Assesses importance of books vs journals, current vs retrospective sources.
- Applications (Line & Sandison, 1975): (i) acquire highly ranked but absent journals, (ii) reconsider low-ranked but subscribed journals, (iii) identify out-of-scope but valuable journals.
- Widely used in academic libraries for journal subscription evaluation.

2.81 Collection Analyser (OCLC)

- Compares a library's collection with authoritative lists & WorldCat.
- Identifies collection gaps, uniqueness, and outdated/unused items.
- Provides alerts for missing important works.

2.82 Return on Investment (ROI)

- Measures economic and academic benefits of library services.
- Demonstrates value in terms of research output, saved time, academic performance.
- Used for sustaining funds & advocating for more resources.
- Example: $1 spent on e-resources may save $4 worth of researcher's time.

2.83 Criteria for Journal Subscriptions

- Factors: educational & research value, indexing in reputed databases (Scopus, Web of Science), impact factor, publisher's reputation, cost/subscription price, bibliometric & altmetric indicators.
- Example: Subscription to *Nature* justified by high impact factor & indexing coverage.

2.84 IFLA Guidelines

- Collection development = ongoing assessment of user needs, usage stats, demographic projections, within budget limits.
- Processes: (i) Formulation of selection criteria (ii) Planning for resource sharing (iii) Planning for new collections (iv) Routine selection/de-selection (v) Evaluating access options (format choice, ownership vs licensing).
- Guided by **collection development policy**: sets priorities, aids decision-making.
- Acquisition activities: ordering, receiving, claiming, payment, selecting & evaluating supply sources, negotiating pricing, licensing e-resources, open access movement, scholarly communication.
- **E-resources** key component of collection building. Require computer access; may be remote or local.
- Types: e-journals, e-books, full-text databases, indexing/abstracting databases, reference databases (biographies, encyclopaedias etc.), numeric/statistical databases, e-images, e-audio/visual resources.
- Focus: exclusively on e-resources (purchase, license, free, born-digital, or multi-format).
- Challenges: cost, technical feasibility, licensing, access, preservation.
- Need: clear policies for selection & management of e-resources.

2.86 Methods of Acquisition

Libraries acquire materials through different methods:

- **Purchase order** – Buying directly from publishers/sellers.
- **Membership** – Gaining access to resources by joining professional bodies or associations.
- **Exchange arrangement** – Mutual exchange of documents between libraries/institutions.
- **Gifts** – Donations from individuals, organizations, or authors.
- **Deposit system** – Compulsory deposit of materials (e.g., National Libraries receive one copy of every book published in the country).
  Example: National Library of India gets books under the Delivery of Books Act (1954).

2.87 Acquisition through Purchase Order

- **Major method** used by libraries (local/foreign publishers or suppliers).
- Options:
  - Selecting books from local sellers.
  - Placing direct/standing orders for certain subjects.
- **Common Problems**:

    - **Financial management** – fixed budget allocation; must track subject-wise expenses.
      Example: University library dividing budget among Science, Arts, Commerce departments.
    - **Selection personnel** – need experts with knowledge of subjects, formats (print/online/CD), publishers, and selection tools (bibliographies, review journals).
      Example: Librarian choosing between e-version of a law database vs print volumes.
    - **Acquisition method** – choosing right channels for ordering (direct, distributor, consortia).
    - **Negotiation** – libraries must bargain with suppliers over discounts, delivery time, etc.
      Example: Ordering Springer e-books at institutional discount rates.
    - **Problems in Indian context** – delays in supply, lack of proper invoicing, foreign currency issues.
- **Financial Records Maintained**:
    - General Invoice Register.
    - Accounts Register (subject/department wise).
    - Monthly Statement of Expenditure.

2.88 Acquisition Methods for Purchasing Resources

Libraries choose from different systems of purchasing depending on location, budget, and type of collection.

i) Open Purchase

- Library staff, selection committee, or faculty visit booksellers/book fairs to select items directly.
- **Advantages** – Simple, quick, user satisfaction.
- **Limitation** – Works best in big cities or during book fairs where many stockists are present.
  Example: Delhi University faculty selecting books at Delhi Book Fair.

ii) Direct Order to Publishers

- Library places orders directly with publishers.
- **Advantages**:
    - Saves service charges (no agents involved).
    - Faster supply and easy replacement.
    - Better negotiation for e-resources licensing.
    - Access to back issues and usage statistics.
    - Safer advance payment.
    - Some publishers prefer direct library dealings.
      Example: IIT libraries directly ordering IEEE e-journals.
- **Disadvantages**:
    - Multiple files must be maintained (time-consuming).
    - Each publisher has different platforms/search engines (staff training required).
    - Small orders may not get usual discounts.
    - Delays in communication from publishers.
    - Libraries often weaker in license negotiation.
      Example: A college library struggles to negotiate terms for Springer e-books.

2.89 Books on Approval

- Booksellers bring new books to the library on specific days (weekly/monthly).
- Library staff and selection committee check duplicates, evaluate, and approve books.
- Cost of approved books is matched with subject-wise budget before confirming order.
- **Advantages** – Convenient, allows selection from physical copies, easy for committees.
- **Limitations** – Limited to books sellers choose to bring (may miss important titles).
  Example: A university library in Mumbai fixes every Friday for book approval where stockists bring newly published science and commerce titles.

2.90 Order through an Agent/Vendor

Libraries often prefer agents for acquiring publications from many publishers, especially serials.

Advantages

- Saves correspondence, staff time, and file work.
- Agents have better market knowledge, can execute rush orders quickly.
- Provide up-to-date information on subscription changes.
- Offer discounts for early payment.
- Participate in library conferences to understand needs.
- Can resolve technical problems with e-resources.
- Language specialists help with foreign publications.
  Example: A medical library uses subscription agents like EBSCO for managing multiple foreign journals.

Disadvantages

- Annual billing at old rates → supplementary bills later cause budget issues.
- Change of agent may break serial supply unless communicated carefully.
- Loss of past usage statistics if shifting to a new agent.
- Advance payment risk → if agent fails, library suffers financial loss.
- Agents may struggle with non-English or society publications (e.g., Arabic journals).
- Delay in forwarding payment may lead to missing issues.
  Example: A law library loses some issues of an international law journal because the agent delayed forwarding payment to the publisher.

2.91 Quotation Method / Standing Vendor Method

- Libraries invite quotations from local suppliers for discount rates and supply terms.
- Firm offering **highest discount** is usually approved for supply.
- If approved for the whole financial year → called **Standing Vendor Method**.
- If quotation is invited for each new list of requirements → **Quotation Method**.
- **Limitations** – High-discount vendors may not supply "short discount" or no-discount titles, regional language works, or foreign publications.
  Example: A state university library selects a vendor offering 20% discount. Later, the vendor fails to supply French and Hindi titles needed by researchers.

2.92 Consortium Method of Acquisition

- Emerged in the late 1990s when electronic serials became costly.
- Libraries form a **consortium** (loose group) to negotiate better subscription rates.
- Benefits:
  - Saves subscription cost.
  - Gives access to additional journals not individually subscribed.
  - Improves bargaining power with publishers.
- **Example (India):** *INDEST (Indian National Digital Library in Engineering Sciences and Technology)* set up by MHRD provides shared access to costly e-journals for IITs, NITs, and engineering colleges.

2.93 Online Booksellers / Buying Books on Web

- With digitisation, online dealers supply both new and old books.
- Enables libraries to acquire hard-to-find or out-of-print books.
- Major players: **Amazon.com, Barnes & Noble, Borders**.
- Advantages – Wide reach, convenient ordering, quick comparison of editions/prices.
- Limitations – Delivery delays, dependency on international shipping, fluctuating foreign exchange rates.

Example: A research library buys an out-of-print 1970s sociology book from Amazon Marketplace to meet a PhD student's special request.

2.94 Negotiation for Terms and Conditions of Supply

In acquisition work, **negotiation** with suppliers is crucial to ensure timely delivery, fair pricing, and quality service. It covers aspects such as discounts, payments, and licensing models.

i) Trade Discount

- Suppliers generally give a **discount on printed price** of books.
- Earlier, the *Good Offices Committee* (including librarians, suppliers, UGC & Finance Ministry nominees) recommended discount and conversion rates.
- Today, discounts are negotiated directly between libraries and suppliers.
  Example: A university library negotiates a 20% discount with a vendor for bulk orders of engineering books.

ii) Payment Methods

- Subscription to serials is usually **paid in advance**.
- Some suppliers demand advance payment for books too → risky if supplier delays or goes out of business.
- Libraries must ensure the **creditworthiness** of suppliers.
- Many libraries enter into a **written agreement** to protect against default.
  Example: A library pays an agent in advance for journals but signs a contract requiring a refund if supply is interrupted.

iii) Price Models for E-Resources

- E-resources often have **different pricing models** (e.g., per-user license, institutional license, consortia license).
- Negotiations may involve access rights, user statistics, technical support, and renewal terms.
- Legal and technical experts should be involved in finalizing agreements.
  Example: A digital library negotiates a license with Elsevier where 100 simultaneous users can access journals, instead of paying per individual user.

2.95 Problems Specific to Indian Libraries

Besides general acquisition issues, Indian libraries face **unique challenges**:

i) Location of Book Market

- Publishing industry is concentrated in a few metropolitan cities.
- Libraries in small towns depend on **local jobbers**, who often fail to supply required books.
- Orders to major booksellers are **delayed**, and by the time orders are placed, many titles are already sold out.
  Example: A library in Assam may struggle to get the latest books quickly since most major publishers are in Delhi or Mumbai.

ii) Foreign (Non-English) Language Publications

- Indian book dealers have **limited facilities** for importing books in French, German, Chinese, etc.
- Academic libraries with **area studies departments** cannot fully support teaching/research due to lack of such materials.
  Example: A university offering Japanese Studies may not get enough authentic Japanese publications.

iii) Serials Subscription

- No comprehensive and up-to-date **directory of serials** (like Ulrich's Directory abroad).
- Makes it difficult to select and subscribe to useful journals.
  Example: A medical library may miss subscribing to a new international journal due to lack of proper listing.

iv) Indian Language Publications

- Publishers in Indian languages do not produce enough books to support **advanced studies**.
- Lack of proper **selection tools** for Indian-language books compared to English publications.
  Example: A library may find plenty of English books on economics but very few advanced ones in Hindi or Bengali.

v) Government Publications

- (Not fully described in your text, but continuing logically): Government publications are often **delayed**, not widely distributed, or hard to access.
  Example: A library may struggle to get timely copies of Census reports or Parliamentary proceedings.

2.100 Acquisition through Membership

- Libraries get publications via membership of research organisations, academic bodies, and professional associations.
- Membership may be **free** or require **annual fee**.
- Publications received are often **not available in open market**.
  Example: A library member of Indian Statistical Institute gets their research bulletins.

2.101 Acquisition under Exchange Arrangement

- Libraries exchange their own publications with those of universities/research organisations.
- Mostly applies to **serials**.
- Can be **open exchange** (no value matching) or **equal value exchange**.
- Common between **national libraries of two countries**.
  Example: Indian National Library exchanging publications with British Library.

2.102 Acquisition through Gifts

- Libraries receive gifts from governments, political parties, pressure groups, and international bodies (UN, UNESCO, World Bank).
- Eminent scholars or families of personalities donate personal collections.
- Gift collections may be kept as **special named collections**.
  Example: Nehru Collection at National Library, Kolkata.
- **Problems:** Conditional gifts, irrelevant/out-of-scope material, space issues.
- Solution: Clear **gift acceptance policy** needed.

2.103 Acquisition under Deposit System

- Certain libraries designated as **depository libraries** for government or international organisations (e.g., UNESCO, World Bank, ILO).
- Example: JNU Library – UN depository; Gokhale Institute – World Bank depository.
- **Problems:** Materials often irrelevant, space and service difficulties, time-consuming management. Regular **weeding** recommended.
- Another form: Deposit of **private papers of eminent persons** for researchh use only.
  Example: Sapru House Library – papers of Jaya Prakash Narayan; Nehru Memorial Museum – papers of politicians/social workers.

2.104 Order and Receipt Process

Order process has **3 routines**:

1. **Pre-order routines**
   - Check book selection slips → verify bibliographic details, duplication with existing/ordered/received books.
   - Confirm if duplicate copies needed.
   - Ensure **funds availability** → match cost with subject budget & unspent balance.

2. **Order placing routines**
    - Recheck supplier terms & conditions (avoid extra charges).
    - Clarify postage, packaging, mode of dispatch, invoice requirements.
    - Record estimated cost in **budget allocation register**.
    - File selection cards of ordered books in **order tray**.
3. **Receipt of supply routines**
    - Check package (address & physical condition).
    - Look for communication on pending/non-supplied titles.
    - Compare supplied titles with order copy (no. of copies & price).
    - Scrutinize each title (physical condition & completeness). Return defective copies.
    - Transfer selection cards from **order tray → receipt tray**.
    - Send books with invoice for **accessioning**. After accession, invoice with accession no. entered in **bill register** → sent to payment office.

2.105 Technical Section (Processing Department)

- **Also called**: Processing Dept., Technical Processing Section, Cataloguing Dept., Technical Dept.
- **Role**:
    - Acquisition builds **collection**, but Technical Section makes it **usable/serviceable**.
    - Functions:
        1. **Technical processing** → classification & cataloguing.
        2. **Physical preparation** of documents for circulation/use.

2.106 Need for Technical Processing

Factors creating need:
i) **Growth of information** → more documents, users lack time to search/assimilate.
ii) **Complexity of subjects** & rise of interdisciplinary research.
iii) **User demand** for better services.
iv) **Five Laws of Library Science** (esp. 2nd & 3rd) → push for efficient organization.
Vocabulary Control Devices: Classification Schemes, Thesauri, Catalogue Codes, Subject Headings Lists.
Advantages:

- Systematic arrangement → easy storage & retrieval.
- Facilitates query analysis.
- Aids in preparation of **information services & products**.

2.107 Organisational Structure of Technical Section

- **Units in University Libraries**:
    - Classification Unit
    - Cataloguing Unit
    - Book Processing Unit
- **Small libraries**: No formal division, but same functions carried out.
- **Requirement**:
    - Headed by a **dynamic professional** with expertise.
    - Adequate staff for processing work.
    - **Cooperation** with other library sections essential.

2.108 Catalogue Code

- **Definition**: Set of rules for preparing catalogue entries.
- **Examples**:
    - **AACR-2 (Anglo-American Cataloguing Rules, 2nd ed.)** → detailed, for **dictionary catalogue**.

    - **CCC (Classified Catalogue Code, Ranganathan, 5th ed.)** → simple, scientific, logical, for **classified catalogue**.
- **Choice depends on**: type of catalogue (classified/dictionary), extent of bibliographic description, uniformity with associated libraries, standardisation.
- **Subject Heading Lists** (used with AACR-2):
    - **Sears' List of Subject Headings** → suitable for small/general libraries.
    - **Library of Congress Subject Headings (LCSH)** → for large/academic libraries.
    - **Special libraries** → need specialised lists.
- **Indexing techniques**:
    - **Chain Indexing** (Ranganathan, for CCC).
    - **PRECIS** (Preserved Context Indexing System).
    - **POPSI** (Postulate-based Permuted Subject Indexing).

2.109 Internal Form of the Catalogue

- **Types**:
    - **Dictionary Catalogue** → entries arranged alphabetically.
        - **Advantage**: easy for general readers.
        - **Example**: common in **public libraries**.
    - **Classified Catalogue** → entries arranged by subject/class numbers.
        - **Advantage**: systematic subject approach, useful for research.
        - **Example**: **university/research libraries**.

2.110 Physical Form of the Catalogue

- **Forms**:
    - **Book Form** (printed catalogue).
        - **Advantage**: economical for small, slow-growing libraries.
        - **Disadvantage**: cannot be updated quickly.
        - **Example**: some old Indian libraries.
    - **Card Catalogue** (cards for each entry).
        - **Advantages**: flexible, updatable, expandable.
        - **Disadvantage**: requires maintenance of large card files.
        - **Example**: most Indian academic libraries.
- **Practice**: even libraries with printed catalogues maintain a **card file as master record**.

2.111 Classification & Cataloguing Policy

- **Policy Decisions Needed**:
    - **Broad vs Close classification**:
        - Broad → general subject (less depth).
        - Close → coextensive with thought content.
        - **Example**: A book on "Quantum Cryptography" →
            - Broad → classify under **Computer Science**.
            - Close → classify under **Cryptography (Quantum)**.
    - **Cataloguing type**:
        - **Descriptive** (full details).
        - **Simplified/Selective** (shortened).
        - **Example**: Small school library may use simplified; research library uses descriptive.
    - **Entries**: how many **main** & **added entries** per book.
    - **Local variations**: adapt rules to meet local needs.
    - **Physical format**:
        - **Card form** (handwritten/typed).

        - **Ledger form** (handwritten/printed).
        - Printed → may be shared with other libraries.
- **Importance**: Decisions must be made at the start, as **midway changes cause inconsistency**.

2.112 Procedures & Routines in Technical Section

- **Major activities**:
    - Physical processing
    - Classification
    - Cataloguing
    - Coordinating work
    - Releasing work
    - Card filing & catalogue updating
- **Purpose**: To transform raw books into **ready-to-use serviceable documents** for readers.

2.113 Physical Processing Work

- **Responsibility**: Done by menial staff under **supervision of Technical Section head**.
- **Includes**:
    1. **Cutting**: Opening uncut pages with a **cutting bone/paper knife** (not sharp).
        - *Example*: A new novel with uncut edges must be trimmed before shelving.
    2. **Easing the Back**: To loosen spine if glue is hardened; open book in middle and press gently section by section.
        - *Example*: A thick reference book that does not open flat.
    3. **Stamping**: Library ownership stamp in **conventional places** → verso of title page, first chapter page, last text page, blank side of maps/plates.
        - *Example*: National Library stamp at standard positions to prevent theft.
    4. **Book Plate Fixing**: Pasted **top-left inside cover**.
        - *Example*: Library emblem or "This book belongs to…" plate.
    5. **Book Pocket Fixing**: Right-hand bottom of inside front cover; eased so book card slips in smoothly.
        - *Example*: University library book pocket holding borrower's card.
    6. **Date Label Fixing**: On first end-page after cover; glue only on **top edge**.
        - *Example*: Due-date slip pasted neatly in a school library book.
    7. **Tagging**: Call number label/tag pasted on spine at uniform height (~1 inch from bottom).
        - If too thin → tag pasted on front cover near spine.
        - Books with jackets → extra tag pasted on jacket at same position.
        - *Example*: DDC number "025.3 CAT" pasted on spine of a cataloguing book.

2.114 Good Practices in Physical Processing

- Use **good quality, fast-drying glue**.
- Remove excess glue → prevents sticking of pages.
- Uniform height & neatness → ensures easy shelving and retrieval.
- After completion → documents sent back to **chief of Technical Section** → forwarded to classifiers for further processing.

2.115 Classification Work

Library classification = **translating subject of a document into class number (ordinal language)** → determines its exact position on shelves.

Steps in classification work:

1. Preliminary Sorting
2. Checking with Catalogue

3. Determining Specific Subject
4. Assigning Class Number
5. Assigning Book Number
6. Assigning Collection Number
7. Writing Call Number on the Book
8. Cross References

2.116 Preliminary Sorting

- **Process**: Separate fiction from non-fiction → group non-fiction by subjects → sort by language.
- **Purpose**: Easier distribution of books to classifiers according to language/subject knowledge.
- **Process Slip**: 3" × 5" slip attached to book → records classification & cataloguing notes.
- *Example*: Fiction (novels) separated from Science books; English books sent to one classifier, Hindi books to another.

2.117 Checking with Catalogue

Classifier checks if the item is:
a) Subsequent copy of already processed book
b) New edition of already processed book
c) New volume of existing multi-volume set
d) Entirely new document

- For (a–c): Only **consolidating work** (same class number, adjust book number). Update existing catalogue card.
- For (d): Full technical processing needed.
- *Example*:
  - 5th copy of *Harry Potter* → same class number, new book number.
  - 2nd edition of *Modern Physics* → same class number, note edition.
  - Vol. 3 of *History of India* series → update catalogue.

2.118 Determining the Specific Subject

- Classifier analyses **true thought-content** of the document.
- Title alone not reliable → must check subtitle, foreword, preface, TOC, introduction, even text.
- Consult dictionaries/reference works if needed.
- **Ranganathan's postulational approach** helpful for subject analysis.
- *Example*: Book titled *"Rivers of Life"* may actually be about **Indian river ecosystem (577.34 DDC)**, not just geography.

2.119 Assigning the Class Number

- Depends on scheme (DDC, UDC, CC, LCC, etc.).
- **DDC**: Use Relative Index + auxiliary tables.
- **CC**: Use Facet Formula to build number.
- **UDC**: Combine main number with common auxiliaries.
- If scheme lacks provision → enumerate new subdivision & record for future.
- *Example*:
  - "Data Mining in Education" → DDC 370.285 (Education + Data processing).
  - "Yoga Therapy" in CC → L,P,Y (Life → Physiology → Yoga).

2.120 Assigning the Book Number

- Distinguishes individual books within the same class number.
- Systems:
  - **CC**: Book number formula (author, year, accession).
  - **DDC/UDC**: Local book numbering system (e.g., Cutter numbers).

- *Example*:
  - "Physics by Halliday, 2015 ed." → Class No. 530; Book No. H18 (Halliday).

2.121 Assigning the Collection Number

- Some books belong to **special collections** (Reference, Rare, Textbook, etc.).
- Call number then has 3 parts → Class No. + Book No. + Collection No.
- *Example*:
  - Encyclopaedia Britannica → REF 030 E56
  - Thesis in special collection → TH 378.7 K25

2.122 Writing the Call Number on the Book

- Written at 3 places:
  1. Verso of title page
  2. Date label
  3. Book tag (spine/front cover)
- Must be neat & uniform.
- *Example*:
  - Call No. "025.3 CAT" written clearly in all 3 locations.

2.123 Cross References (for Classified Catalogue)

- Needed when subject overlaps multiple classes.
- Classifier assigns additional class numbers for **Cross Reference Entries**.
- Same procedure as assigning normal class numbers.
- *Example*:
  - Book on *"Computers in Medicine"* → Main entry under Medicine (610.285) but cross-reference under Computer Science (004.0285).

2.124 Cataloguing Work

- Catalogue = **tool that gives info about all library documents**.
- Must allow **multiple approaches**: subject, author, title, series, editor, translator, compiler, etc.
- **Modern cataloguing** = multiple entries for one book.
- Governed by **catalogue code** (CCC, AACR-2, RDA, etc.).
- Also involves writing **Shelf-list card** & **Book card**.

Steps in cataloguing work:

1. Assign Subject Headings
2. Prepare Main Entry
3. Prepare Added Entries
4. Write Tracing
5. Write Shelf-list Card
6. Write Book Card
7. Forwarding for scrutiny

2.125 Assigning Subject Headings

- Next step after classification.
- Used in: Specific Subject Entries, "See"/"See also" entries (Dictionary Catalogue), Class Index entries (Classified Catalogue).
- **Methods**:
  - CCC → Chain Procedure
  - AACR-2 → List of Subject Headings (e.g., LCSH) or indexing systems (PRECIS, POPSI).
- Must reflect the **specific subject**.
- Cross-reference or Subject Analytical entries → extra headings required.

- Consistency ensured by **Authority File** (record of approved headings).

Example:

- Book: *Artificial Intelligence in Education*
  - Headings: "Artificial Intelligence", "Education – Data Processing".
  - Authority file ensures same term "AI" is not once entered as "Artificial Intelligence" and elsewhere as "Machine Intelligence".

2.126 Main Entry

- Contains **maximum bibliographic details** (as per catalogue code).
- Basis for all other entries.
- Prepared first, either handwritten on card or typed (using Process Slip).

Example:

- Main Entry for *The Discovery of India by Jawaharlal Nehru*:
  - Author: Nehru, Jawaharlal
  - Title: The Discovery of India
  - Publisher: OUP, 1946
  - Collation, ISBN, Series info, etc.

2.127 Added Entries

- Derived from Main Entry info.
- Allow **multiple approaches** (author, editor, title, translator, series, corporate body).
- Number & type decided by cataloguer.
- May be full or abridged (depending on catalogue type).

Example:

- Book: *Chemistry for Engineers*, edited by S.K. Sharma.
  - Added Entries: under "Sharma, S.K. (ed.)", under Title "Chemistry for Engineers", under Subject "Chemistry – Engineering Applications".

2.128 Tracing

- Written on back of Main Entry card.
- Records all Added Entries made.
- Helps when:
  - correcting entries
  - consolidating info
  - withdrawing a book.

Example:

- Tracing for *AI in Education*:
  - "Added entries under Title, Editor, Subject headings: Artificial Intelligence; Education – Computer applications."

2.129 Shelf-list Card

- Card record of each volume, arranged in same order as books on shelves.
- Info: Call No., Author, Title, Accession No.
- Purpose: Stock verification, easy shelf arrangement.
- Often duplicate/abridged Main Entry.

Example:

- Shelf-list card:
  - Call No. 025.3 C32
  - Author: Cutter, Charles
  - Title: Rules for a Dictionary Catalogue

- Acc. No. 10542

2.130 Book Card

- Used in **card charging system** for circulation.
- Info: Call No., Author, Title, Acc. No.
- One per document.

Example:

- Book Card for *Introduction to Psychology*:
  - Call No.: 150 H82
  - Author: Hilgard
  - Title: Introduction to Psychology
  - Acc. No.: 24518

2.131 Forwarding

- After completing cataloguing, cataloguer forwards:
  - Catalogue cards (Main + Added)
  - Shelf-list card
  - Book card
- All placed inside title page → sent to Chief of Technical Dept. for scrutiny & approval.

2.132 Coordinating Work

- Ensures **consistency & accuracy** in processing.
- Responsibility: **Chief of Technical Department** (or appointed coordinator).
- Coordinator checks **physical processing, classification, cataloguing**.

Areas of scrutiny:

1. **Physical Processing Work**
   - All pages cut open
   - Pressing/easing done
   - Library stamp on all pages
   - Book Plate, Book Pocket, Date Label, Book Tag correctly placed
2. **Accession Number**
   - Must match across: title page, Main Entry card, Shelf-list card, Book card, Date label.
3. **Call Number**
   - Correct subject analysis
   - Class No., Book No., Collection No. correct
   - Call No. written on: verso of title page, Book Tag, Date Label, Main/Added Entry cards, Shelf-list, Book card.
4. **Subject Headings**
   - Correct, consistent, and authority file consulted.
   - Amendments noted in authority file.
5. **Catalogue Entries**
   - Main & Added Entries (including Cross References) complete
   - Tracing correctly given
   - Headings conform to rules
   - Info accurate, no spelling/punctuation errors
   - Corrections made immediately before release.

2.133 Releasing Work

- Done **after scrutiny** of physical + technical processing.
- Interval: weekly, fortnightly, monthly.

- Includes **Accession List** preparation & notifying new arrivals.

Steps in releasing work:

1. Insert Book Card in Book Pocket.
2. Separate Shelf-list cards.
3. Separate Main Entry cards.
4. Separate Added Entry cards.
5. Arrange Main Entry cards in classified order.
6. Type Accession List from Main Entry cards.
7. Note Date of Release on Date Label.
8. Put books on **display rack** before merging into collection.

Practice:

- Accession List may be:
  - Posted on Notice Board
  - Printed/cyclostyled & mailed
  - Published in newspapers
- Display allows readers to **examine new books** & reserve them.

2.134 Card Filing Work

- After releasing, catalogue cards filed into catalogue.
- **Classified Catalogue**:
  - Main + Cross-reference entries → Classified Part
  - Other Added Entries → Alphabetical Part
- **Dictionary Catalogue**:
  - All entries in single alphabetical sequence.

Filing rules:

- Classified filing → governed by **ordinal value of symbols in Call No.**
- Alphabetical filing → needs standard rules (ALA Rules for Filing, Standards for Alphabetical Arrangement).

Shelf-list cards → filed in Shelf-list parallel to shelf order.

2.135 Catalogue Updating Work

- Responsibility: **Technical Department**.
- Includes:
  - Filing new entries
  - Corrections, consolidations, withdrawals
  - Labelling trays + adding guide cards
  - Shifting cards as collection grows
- Continuous task since catalogue grows with collection.

2.136 Forms and Records

- Unlike other departments, **no register** maintained.
- Uses records, forms & stationery for processing.
- Major records: **Catalogue, Shelf-list, Authority File**.
- Others: **Work Diary, Routine Files**.

2.136.1 Catalogue

- **Most important record** of Technical Department.
- Publicly kept in library, but staff need frequent reference.
- Some libraries keep **duplicate copy** in Technical Dept. (but involves more work, cost, space).

2.136.2 Shelf-list

- Maintained by Technical Dept. under **safe custody**.

- In **card form**, arranged parallel to shelf order.
- Stored in cabinets; occupies **substantial space**.

2.136.3 Authority File

- Maintained in Technical Dept.
- **Card file** of:
    - Subject Headings
    - Personal/Institutional names
- Ensures **consistency** in cataloguing.

2.136.4 Work Diary

- Maintained at **two levels**:
    1. **Individual staff diary**
    2. **Department diary** (daily/weekly → consolidated monthly/annually).
- Used for **statistical reporting** & **work evaluation**.

Work diary records include:

- Items received for processing
- Items physically processed
- Items classified afresh
- Items catalogued afresh
- Consolidated items: copies, editions, volumes
- Items released
- Items displayed
- Items listed/typed
- Catalogue cards written: Main, CRE/subject analyticals, CRIE/See & See also, Class Index, Other added entries
- Shelf-list cards written
- Book cards written
- Catalogue cards filed
- Shelf-list cards filed

2.136.5 Files

- Not many, but necessary ones:
    - Accession Lists issued
    - Stationery/materials/equipment purchase
    - Policy decisions

2.136.6 Forms & Stationery

- Used mainly in **physical processing work**.
- Include:
    - Book Tag
    - Date Label
    - Book Plate
    - Book Card
    - Book Pocket
- **Major form**: Catalogue Card
- Some libraries also use:
    - Printed Class Index Cards
    - Guide Cards (for feature headings in catalogue trays).

2.137 Introduction to Major Schemes of Classification

- **Modern library classification** began in **1876** with Dewey's system.

- Solved problems of **shelf arrangement & book display**.
- Inspired many new systems aiming to **improve or explore alternatives**.

Notable Systems (Chronological):

- **DDC – Dewey Decimal Classification (1876+)**
- **C.A. Cutter's Expansive Classification (1893)**
- **UDC – Universal Decimal Classification (1895+)**
- **LCC – Library of Congress Classification (1903+)**
- **J.D. Brown's Subject Classification (1906)**
- **CC – Colon Classification by Ranganathan (1933+)**
- **BC – Bliss' Bibliographic Classification (1940–1953)**
- **Rider's International Classification (1961)**
- **BSO – Broad System of Ordering (1978)**
- **BC2 – Bibliographic Classification, 2nd ed. (1977+)**

2.138 Systems No Longer in Use

- **Cutter's Expansive Classification**
- **Brown's Subject Classification**
- **Bliss' BC (1st ed.)**
- **Rider's International Classification**

2.139 Current Major Systems

- **DDC, UDC, LCC** → three **major living systems**, widely used and often in competition.
- **BC-2** → highly regarded but still incomplete (by J. Mills).
- **BSO** → used for broad subject ordering.

2.140 Colon Classification (CC) – S.R. Ranganathan

- **Introduced 1933**.
- **Most scientific system**; introduced **facet analysis** & **postulational approach**.
- Considered a **paradigm shift** in classification theory.
- Influence:
  - Even though CC's practical use declined, its **methods pervaded all modern classification designs**.
  - Served as **foundation/mother system** for later developments (DDC, UDC, BC-2, BSO).

2.141 CC – Background

- Conceived, designed, and published between **1924–1933** by **S.R. Ranganathan (1892–1972)**.
- Initially **no formal theory**, though influenced by **Vedic classification**.
- Outlook mainly **Western**, dividing knowledge into **Sciences → Humanities → Social Sciences** (in evolutionary order).

2.142 CC – Order of Main Classes

- **A/B** – Science / Mathematics
- **C/D** – Physics / Engineering
- **E/F** – Chemistry / Technology
- **G/H** – Biology / Geology
- **I/J/K** – Botany / Agriculture / Zoology
- **L** – Medicine
- **M/N** – Useful Arts / Fine Arts
- **O/P** – Literature / Languages
- **Q/R** – Religion / Philosophy
- **S/T** – Psychology / Education

- **U/V** – Geography / History
- **W/X** – Political Science / Economics
- **Y/Z** – Sociology / Law

2.143 CC – Special Features of Main Classes

- **Mysticism** → Unique class between **M (Useful Arts)** and **N (Fine Arts)**.
- **Generalia/Form Classes (a–z)** → Bibliographies, Encyclopedias, etc.
- **New Emerging Classes (1–9)** → e.g., Library Science, Mass Communication.
- **Sciences (A–M)** → Arranged in order of **increasing concreteness**.
- **Principle of Dependency (Comte)** → Theory before application (e.g., Botany before Agriculture).
- **Humanities (N–S)** → In order of **increasing richness of subject content**.
- **Social Sciences (T–Z)** → In order of **increasing artificiality of laws** (e.g., Z – Civil Law = most artificial).

2.144 CC – Mysticism and APUPA Pattern

- **Mysticism** → At the **confluence of sciences & humanities**, considered **highest knowledge in Hindu tradition**.
- **APUPA Pattern** → Logical shelf arrangement:
  - **A (Alien/Unrelated)**
  - **P (Penumbra/Peripheral)**
  - **U (Umbral/Focused subject)**
  - **P (Penumbra again)**
  - **A (Alien again)**
- Ensures **systematic, pedagogical subject proximity** on shelves.

2.145 CC – Significance

- Provides the **most systematic subject order** among classification systems.
- Harmonizes **Indian philosophical outlook** with **Western scientific structure**.
- Introduced influential principles (Dependency, APUPA, concreteness ordering).
- Shaped **modern classification theory and practice** worldwide.

2.146 DDC – Introduction

- Full name: **Dewey Decimal Classification (DDC)**, also called **Dewey Decimal System**.
- Developed by **Melvil Dewey (1851–1931)**, first published **1876** (44-page pamphlet).
- Currently maintained by **OCLC**, with **WebDewey** (online version).
- Revised **23 major editions**; last printed in **2011**.
- Used in **200,000+ libraries across 135 countries**.
- Has **full edition** (for big libraries) and **abridged edition** (for smaller libraries).

2.147 DDC – Key Concepts

- Introduced **relative location** → books arranged by **subject**, not by acquisition date.
- Introduced **relative index** → systematic subject searching.
- Uses **3-digit main class numbers** (000–999).
- **Decimals** allow further expansion (flexibility, specificity).
- Each book given a **unique class number** to locate and shelve properly.

2.148 DDC – History: Early Development (1873–1885)

- **1873**: Dewey developed idea while at **Amherst College Library**.
- **1876**: Published first pamphlet *A Classification and Subject Index...* (44 pages, 200 copies).
- Included **2000 index entries**.
- Copyright secured in **1876**.

- Promoted through **Library Journal** and **Department of Education** reports.

2.149 DDC – History: Adoption Period (1885–1942)

- **2nd edition (1885)** → 314 pages, 10,000 index entries, 500 copies printed.
- **Editions 3–14 (1888–1942)** → gradual expansion.
- Growth: by **12th edition** → 1,243 pages (25% increase).
- **1894**: First **abridged edition** for small libraries.
- **1930**: Library of Congress began printing **DDC numbers on catalog cards**.
- **Cutter's Expansive Classification** and **UDC** emerged in this period, but DDC became most used.
- **1927 survey**: DDC used in **96% public libraries** and **89% college libraries** in the U.S.
- By **1942 (14th ed.)** → index grew to **1900+ pages, 2 volumes**.

2.150 DDC – History: 1942 to Present

- **Growth Criticism**: Full edition too large, abridged too small → need for a balanced edition.
- **15th edition (1933)** → "Standard Edition" (reduced size: 1900 to 700 pages). Too radical → advisory committee formed.
- **16th & 17th editions** → Edited by **Library of Congress**, grew back to 2 volumes.
- DDC established for **general libraries**; **LCC (Library of Congress Classification)** preferred in **research libraries**.
- **1933**: Bibliographic edition separated → became **Universal Decimal Classification (UDC)**.
- **1993**: First **electronic version of DDC** launched.
- **WebDewey** and **Abridged WebDewey** → updated quarterly online.

2.151 DDC – Significance

- **Most widely used classification** worldwide.
- Flexible, expandable, and suitable for all library sizes.
- Simple notation (decimals) + **relative location principle** improved accessibility.
- Established **standard for subject-based arrangement** in libraries.
- Still evolving through **OCLC & WebDewey updates**.

In addition to the full version, a single-volume abridged edition designed for libraries with 20,000 titles or fewer has been made available since 1895. The last printed English abridged edition, Abridged Edition 15, was published in early 2012

Full edition	Publication year	Abridged edition	Publication year
1st	1876		
2nd	1885		
3rd	1888		
4th	1891		
5th	1894	1st	1895
6th	1899		
7th	1911		
8th	1913	2nd	1915
9th	1915		
10th	1919		
11th	1922	3rd	1926
12th	1927	4th	1929
13th	1932	5th	1936
14th	1942	6th	1945
15th	1951	7th	1953
16th	1958	8th	1959
17th	1965	9th	1965
18th	1971	10th	1971

19th	1979	11th	1979
20th	1989	12th	1990
21st	1996	13th	1997
22nd	2003	14th	2004
23rd	2011	15th	2012

2.152 DDC – Main Classes (DDC 23)

- **000** – Computer Science, Information & General Works
- **100** – Philosophy & Psychology
- **200** – Religion
- **300** – Social Sciences
- **400** – Language
- **500** – Pure Science
- **600** – Technology
- **700** – Arts & Recreation
- **800** – Literature
- **900** – History & Geography

2.153 DDC – Tables (DDC 23)

- **T1** – Standard Subdivisions
- **T2** – Geographic Areas, Historical Periods, Biography
- **T3** – Subdivisions for Arts, Individual Literatures, Literary Forms
- **T3A** – Works by/about Individual Authors
- **T3B** – Works by/about More than One Author
- **T3C** – Notation for use with Table 3B, 700.4, 791.4, 808–809
- **T4** – Subdivisions of Individual Languages & Language Families
- **T5** – Ethnic & National Groups
- **T6** – Languages

2.154 DDC – Relative Index

- An **alphabetical index** to classification for both catalogers and users.
- Called **"Relativ Index"** by Dewey.
- Entries point to **class numbers**, not page numbers.
- Makes classification **parallel to library shelves** (relative positioning).
- Serves as **entry point for catalogers** and **search tool for users**.

2.155 UDC – History

- Conceived by **Paul Otlet** and **Henry La Fontaine** (Belgium, 1885) while working on **Universal Bibliographic Repertory**.
- Needed a system to arrange entries; inspired by **Dewey Decimal Classification (DDC)**.
- In **1895**, received permission from **Melvil Dewey** to translate into French.
- Developed as more than a translation → first **analytico-synthetic classification**.

2.156 UDC – First Analytico-Synthetic Classification

- Decimal Classification seen as **taxonomy of human knowledge in numbers**.
- Extensibility of decimals suited for **bibliographic detail**.
- Innovations:
  - Allowed **synthesis** (compound numbers for interrelated subjects).
  - Introduced **symbols for relationships** between subjects.
  - Created **auxiliary tables** for common characteristics.
- Greater **precision with economy** of presentation.

- First edition (1900–1902) published in French by **KB** as *Handbook to the Universal Bibliographic Repertory*.
- Contained **33,000 subdivisions**.

2.157 UDC – Expansion

- Work on 2nd edition after **WWI**, led by **Frits Donker Duyvis** (Dutch Patent Office).
- Published 1927–1933, with **70,000+ subdivisions**.
- Now issued independently as **Classification Décimale Universelle (CDU)**.
- Became the **master version (1933–1993)**, updated through supplements and *Extensions and Corrections to the UDC*.
- 3rd edition (German), edited by **Carl Walther** (1934–1951), expanded to **140,000 subdivisions**.

2.158 UDC – Change of Ownership

- Managing body transitions:
  - **IIB (Institut International de Bibliographie, 1931) →**
  - **IID (Institut International de Documentation, 1937) →**
  - **FID (Federation Internationale de Documentation, 1988) →**
  - Dissolved in 2000.
- FID managed UDC for decades.
- In **1992**, **UDC Consortium (UDCC)** formed with FID, BSI, and publishers.
- UDCC became legal owner, with headquarters at **The Hague**.

2.159 UDC – Master Reference File (MRF)

- UDCC's first task: create a **database of 60,000 entries**.
- Completed in **1993** → now the **authoritative version** of UDC.
- Full printed editions (220,000 entries) still valid.
- **Extensions and Corrections to the UDC** (since 1949) provide authorized amendments, first twice yearly, later annually.

2.160 UDC – Languages & Global Use

- Working languages of FID: **English, French, German** (till 1992).
- UDCC official language: **English**.
- UDC translated into **many languages**.
- Currently used in **100+ countries worldwide**.

2.161 UDC Editions – General

- Printed in **40 languages**.
- **UDC Summary** (2,600 classes) available in **57+ languages**.
- Bibliography of editions reported till **2011**.
- Research on UDC use worldwide conducted **2004–2006**, published in *Journal of Documentation* (2008).

2.162 Selected Complete Printed Editions

- **English**: UDC Standard Edition (2 vols., BSI, 2005).
  - Vol. 1: Systematic Tables (ISBN 0-580-45469-X).
  - Vol. 2: Alphabetical Index (ISBN 0-580-45470-3).
- **French**: International Medium Edition, 3 vols. (Liège, CEFAL, 2004, ISBN 2-87130-152-2).
- **Spanish**: Norma UNE 50001:2015, 3 vols. (AENOR, Madrid, 2015, ISBN 978-84-8143-822-2).
- **Portuguese (Brazil)**: 2nd International Standard Edition (Brasília, 2007).
  - Vol. 1: Systematic Tables (1257 pp., ISBN 978-85-7013-075-4).
  - Vol. 2: Alphabetical Index (603 pp., ISBN 978-85-7013-074-7).

2.163 UDC Online Editions

- **Multilingual**:
  - **UDC Summary** (57 languages, 2600 classes, free).
  - **UDC Online Hub** (complete multilingual).
- **English**: UDC Online English (paid, free trial).
- **Spanish**: CDU Online Español (paid, free trial).
- **Dutch**: UDC Online Nederlands (paid, free trial).
- **Croatian**: Hrvatski UDK Online (free subscription).
- **Czech**: České MDT Online (free subscription).
- **French**: CDU Online Français (paid subscription).
- **Polish**: Polska UKD Online (free subscription).
- **Serbian**: Српски УДК Online (free subscription).
- **Slovakian**: Slovenské MDT Online (free subscription).
- **Slovenian**: UDCMRF12 (Standard Edition 2020, paid).
- **Swedish**: Universella decimalklassifikationen (Abridged, 6100 classes, free).

2.164 First UDC Editions

- *Manuel du Répertoire Bibliographique Universel* (Brussels, IIB, 1905–1907).
- *Classification Décimale Universelle* (FID 151, Brussels, IIB, 1927–1933).
- *Dezimal-Klassifikation (Gesamtausgabe)* (FID 196, Berlin: DNA, 1934–1953).

2.165 AACR Background

- Efforts for catalog standardization by **ALA, LC, Library Association (UK), British Library** from late 19th to mid-20th century.
- First joint code: **Catalog Rules: Author and Title Entries (AA 1908)**, prepared by ALA & LA; 174 rules.
- Published in **two editions** (British & American) due to disagreements; remained unrevised for 20 years.
- 1930s: Need for revision recognized, but **WWII stopped cooperation**.
- **ALA Cataloging Rules for Author and Title Entries (ALA 1949)** published (revision of 1941 draft); contained only entry/heading rules.
- **LC 1949: Rules for Descriptive Cataloging** covered monographs, serials, non-book materials; widely adopted.
- Together, **ALA 1949 + LC 1949** were U.S. descriptive cataloging standards until **AACR (1967)**.

2.166 Toward AACR

- **1951**: ALA invited **Seymour Lubetzky (LC)** to review ALA 1949.
- Result: **Cataloging Rules and Principles (1953)** → argued for principle-based, not case-based, code.
- **1956**: Lubetzky appointed editor for new code.
- **1960**: Produced **Code of Cataloging Rules; Author and Title Entry: An Unfinished Draft**.
- **1961 Paris Conference on Cataloguing Principles**: 12 **Paris Principles** established; based on Lubetzky's draft.
- Anglo-American cooperation continued revision using Paris Principles as foundation.

2.167 AACR (1967)

- First **Anglo-American Cataloguing Rules (AACR)** published 1967.
- Two editions: **North American Text (USA)** and **British Text (UK)**.
- Collaborators: **ALA, LC, LA (UK), CLA (Canada)**.
- AACR structure:

    - **Part I: Entry & Heading** (5 chapters) – based on Paris Principles, ALA 1949, Lubetzky's draft.
    - **Part II: Description** (4 chapters) – revised LC 1949 rules.
    - **Part III: Non-book Materials** – rules for entry & description of non-book formats.
    - Appendices showed differences between editions.
- **Amendments (1969–1975)**: Published in *LC Cataloging Service* (North America) & *LA AACR Amendment Bulletin* (UK).

2.168 Toward AACR2

- After Paris Principles (1961), next major step: **International Meeting of Cataloguing Experts, Copenhagen (1969)**.
- Developed **International Standard Bibliographic Description (ISBD)** under **IFLA**.
- ISBD focused only on **descriptive cataloging** (not headings).
- Features of ISBD:
    - Specifies **sources** for transcription.
    - Defines **order of elements**.
    - Prescribes **punctuation** for separating elements.
    - Ensures **standardized, recognizable format**.
    - Facilitates **international exchange of records**.
- ISBD became **foundation of AACR2**.
- By **1973**, need felt for **AACR revision**.
- **1974**: U.S., UK, Canada met → planned **AACR2**.
- Formed **Joint Steering Committee (JSC)** with ALA, BL, CLA, LA, LC.
- Editors: **Michael Gorman (BL)** and **Paul W. Winkler (LC)**.

2.169 AACR2 (1978)

- Published 1978, merging **North American & British texts** into single edition.
- Used **British spelling "cataloguing"**.
- Style followed **Chicago Manual of Style**.
- Spelling conventions:

Feature	Choice
Parentheses vs. Brackets	American usage (parentheses)
Period vs. Full Stop	British usage (full stop)
Spelling	British spelling preferred if listed in Webster's 3rd

2.170 Structure of AACR2

- **Two Parts**:
    - **Part I (Ch. 1–13): Description** – Bibliographic description of items.
    - **Part II (Ch. 21–26): Headings, Uniform Titles, References** – Rules for access points.
- **Appendices (A–E):** Capitalization, Abbreviations, Numerals, Glossary, Initial Articles.
- **Skipped Ch. 14–20** → space for future expansion & mnemonic clarity.

2.171 Part I – Description

- **Ch. 1**: General rules for all formats (including future ones).
- **Ch. 2–12**: Specific material types:
    1. Books, pamphlets, printed sheets
    2. Cartographic materials
    3. Manuscripts
    4. Music

5. Sound recordings
6. Motion pictures & video recordings
7. Graphic materials
8. Machine-readable data files → (renamed *Computer files* in 1988)
9. 3D artifacts
10. Microforms
11. Continuing resources (serials)

- **Ch. 13**: Analytical entries (special structure).

2.172 Part II – Headings & References

- **Ch. 21**: Rules for **main/added entry access points**.
- **Ch. 22–24**: **Headings** for personal, geographic, corporate names.
- **Ch. 25**: **Uniform Titles** (standardized titles across editions/versions).
- **Ch. 26**: **References** from variant/different names or titles.
- Focused on **works** rather than individual physical items.

2.173 International Alignment in AACR2

- **Part I**: Based on **ISBDs**.
  - **Ch. 1** → ISBD(G) General.
  - **Other chapters (2–12)** → Each based on a specialized ISBD (e.g., ISBD(M) for monographs).
- **Part II**: Rules aligned with **Paris Principles (1961)**.

2.174 Revisions of AACR2

- AACR2 revised multiple times:

Revision	Year	Notes
AACR2R (1988)	1988	Major revision
AACR2R (1998)	1998	Updates, harmonization
AACR2R (2002)	2002	Substantial changes for non-book materials
Updates	2003, 2004, 2005	Periodic updates

- **Not called AACR3** → continued as AACR2 revisions.

2.175 Governance of AACR2

- **Published jointly by**:
  - American Library Association (ALA)
  - Canadian Library Association (CLA)
  - Chartered Institute of Library and Information Professionals (CILIP)
- **Committee of Principals (CoP)** → Governing body.
  - Coordinates:
    1. Co-Publishers of AACR
    2. Joint Steering Committee (JSC) → after 2007 became *Joint Steering Committee for Development of RDA*
    3. AACR Fund Committee
- **Members of CoP**:
  - CEOs/Directors of ALA, CLA, CILIP
  - Directors of Library of Congress, Library & Archives Canada, National Library of Australia, British Library
- **Functions**:
  - JSC → reviews revisions, prepares text, advises CoP
  - AACR Fund Committee → manages royalties

2.176 The Concise AACR2

- Prepared by **Michael Gorman**.
- Simplified version for libraries not needing full AACR2 details.
- Editions: 1981, revised 1989, 1999, 2004.

2.177 Library of Congress Rule Interpretations (LCRI)

- **Started**: 1988 by Library of Congress.
- Purpose: Record **LC's decisions on options, modifications, interpretations** of AACR2.
- **Updated quarterly**, cumulated annually (till 2005).
- Ensured **consistency** in LC cataloging & other libraries using LC data.
- Currently available via **Cataloger's Desktop**.

2.178 Toward RDA (Resource Description and Access)

- **Early 2000s**: Plans for AACR3.
- **2004**: Tom Delsey appointed editor. Draft of Part I of AACR3 released (Dec 2004).
- **2005**: Negative feedback → AACR3 scrapped.
- **New approach → RDA** (Resource Description and Access).
- **Based on IFLA models**:
    - **FRBR** (Functional Requirements for Bibliographic Records)
    - **FRAD** (Functional Requirements for Authority Data)
- **Strengths**:
    - Flexible framework for all resource types.
    - Stronger focus on **digital resources**.
    - Supports emerging **database technologies**.
- **2009**: JSC delivered full text of RDA.
- **2010**: RDA released as part of **RDA Toolkit** (online).
- **Goal**: Extend AACR2 strengths for **modern digital libraries**.

2.179 Translations of AACR2

- AACR2 translated into many languages: **Arabic, Chinese, Latvian, Portuguese, Spanish**, etc.

2.180 Online Access to AACR2

- Accessible via:
    - **Cataloger's Desktop** (Library of Congress subscription service).
    - **RDA Toolkit** (subscription required).
- RDA Toolkit published by ALA, CLA, and CILIP.
- Provides access to **RDA, AACR2, and related cataloging documents**.

Chapter 3: Reference and Information Services

3.1 User Education

- **User Studies** (global findings):
  - Only a few scientists use libraries optimally.
  - Awareness of bibliographic tools is very low.
  - Library use is **not intuitive**, must be **taught systematically**.
- **Royal Society Scientific Conference** → recommended training in use of scientific information.
- **Perry Committee Report (UK)** → survey showed most undergraduates were not active library users.
- **Need established**: User education is essential for effective use of libraries and information resources.
- **Global attempts**: Many programmes have been developed to train users in accessing and utilising information.
- This process is generally called **User Education**.

Definition

- **General meaning**: A process/programme to make potential users (scientists, engineers, technologists, academics, students) aware of the value of information and motivate them to use information resources.
- **Mews** (*Reader Instruction*) → Instruction to readers to help them make best use of library.
- **Gordon Wright** → Library use cannot be taught in isolation; must be part of continuous education linked with communication.
- **Jacques Tocatline (UNESCO)** → User education includes programmes to guide and instruct users (individually/collectively) with objectives of:
  - Recognising information needs.
  - Formulating needs clearly.
  - Using information services effectively & efficiently.
  - Assessing/evaluating these services.

Nature of User Education

- Concerned with the **whole communication process**.
- Involves **interaction of user with library**.
- Must be a **continuous process**:
  - Starting from school & public libraries.
  - Extending to academic & special libraries.
- Central to the **purpose of the library** → ensures effective utilisation of resources.
- Academic programmes often follow the **Royal Society Scientific Information Conference (1948) model**.

3.2 Components of User Education

User education should be a **continuous process** consisting of two main components: **Orientation** and **Instruction**.

Comparison of Orientation & Instruction

Component	Focus	Objectives	Examples
Orientation	Acquaints users with the **library layout, organisation, services, staff, and facilities**.	- Cognitive: Understanding how library is structured. - Affective: Feeling	1. Library tour for new students. 2. Introducing OPAC (Online Public Access Catalogue).

		comfortable, positive, and confident.	3. Orientation week presentations. 4. Short video on "How to use your library."
Instruction (Bibliographic Instruction)	Teaches users how to use **information resources** effectively and efficiently.	- Learn retrieval techniques. - Develop skills to use bibliographic tools.	1. Workshop on searching databases (Scopus, PubMed). 2. Training on citation management tools (Zotero, Mendeley). 3. Class on indexing & abstracting journals. 4. Advanced course on subject-specific search strategies.

- Instruction can be **introductory** (basic searching) or **advanced** (subject-specific, research-focused).
- **Integration with academic teaching** is essential → teachers must encourage students to see library use as part of learning.
- **Course-integrated programmes**: Librarians + faculty collaboration → students get **practical tasks** (e.g., assignments requiring database searches, annotated bibliographies).

3.3 Historical Development of User Education

- Development well documented → evolving into a globally accepted concept.
- **Bonn (1958)**: *Training Laymen in the Use of the Library* → survey of user education field till 1958.
- **Mirwis (1960–1970)**: Bibliography documenting academic instruction in USA.
- **Evolution**: From isolated instruction → recognised as essential part of education.

3.4 Pioneering Efforts

- **Patricia B. Knapp (1964 Report, Monteith College, Wayne State University)**
  - Aim: Develop a stronger relationship between **library and college teaching**.
  - Integrated user education into teaching methods.
- **Earlham College** → Developed **course-related user education programmes**.
  - Focused on bibliographic instruction with strategies for teaching research skills.
- **Bibliographic Instruction** (two key aspects):
  - **Sources of knowledge** (general reference works, indexing/abstracting journals, catalogues).
  - **Skills development** (knowledge organisation, search strategies, subject analysis).
- **Examples**:
  - Training students to use encyclopedias for background study.
  - Teaching search strategies in subject databases.
  - Exercises in using library catalogues for locating books.
  - Workshops on subject analysis and keyword selection.

3.5 Library's Role in Higher Education

- Debate since long on **library as central to learning**.
- **Louis Shores (1934)** → introduced **Library Arts College** concept.
- Evolved into **Library College** model:
  - Emphasised **library-centred independent study**.
  - Faculty act as **bibliographic experts** guiding students.
  - Shift from **classroom lecture → library as the main place for learning** (carrels/rooms in library).

- **Examples of Library College Practices**:
  - Independent study assignments requiring research in library.
  - Faculty-led seminars inside the library.
  - Use of library resources instead of lecture notes.
  - Students preparing projects using reference works and bibliographies.

3.6 Institutionalisation of User Education

Institutionalisation refers to the **formal recognition and integration** of user education into library and educational systems, supported by national and international organisations.

International Efforts

Institution / Programme	Contribution	Examples
Council of Library Resources (CLR) & Association of College and Research Libraries (ACRL), USA	Provided leadership for user education in academic libraries.	1. ACRL guidelines for bibliographic instruction. 2. Funding pilot projects in US universities. 3. Training academic librarians as educators.
British Library Research & Development Department & Centre for Research in User Studies (UK)	Promoted large-scale user education projects in UK universities.	1. Surveys of postgraduate library use. 2. Development of bibliographic instruction models. 3. Pilot programmes in research libraries.
UNESCO – UNISIST Programme (1975)	Focused on developing countries, emphasising user education in national policies.	1. UNESCO General Information Programme (PGI). 2. Training workshops for librarians in Asia & Africa. 3. Policy recommendations linking education & information services.

Key UNISIST Contributions

- Stressed **basic training** in using information sources.
- Encouraged **feedback from users** for improving services.
- Promoted **integration with national education policies**.
- **Rome Seminar (1976)** → Recommended *National Policy on User Education* as part of **National Information Policy**.

3.7 Conferences & Seminars on User Education

International and national meetings played a vital role in spreading awareness.

Year & Place	Organiser/Theme	Contribution
1970 – Loughborough, UK	IATUL (4th Triennial Meeting) → *Educating the Library User*	First large international focus on user education.
1976 – Gothenburg, Sweden	Anglo-Scandinavian Seminar	Strengthened regional cooperation in library instruction.
1979 – Cambridge, UK	First International Conference on User Education → *Are New Approaches Needed?*	Reviewed traditional vs. new methods of teaching users.

1981 – Oxford, UK	Second International Conference on User Education	Covered user education in different library types (academic, public, special).
1981 – Essen (Germany) & Cranefield Institute of Technology (Australia)	Workshops	Practical training in bibliographic instruction.
1982 – Gothenburg, Sweden	Seminar on User Education in the Online Age	Focus on digital and online resources.

Examples of Impact:

1. Spread of user education beyond English-speaking countries to Europe, Japan, and China.
2. Development of subject-specific bibliographic courses.
3. Greater emphasis on research students in Britain vs. undergraduates in USA.
4. Recognition of user education as a policy issue (not just library practice).

3.8 Development of User Education in India

India also witnessed significant but **fragmented** activity:

Institution	Contribution	Examples
INSDOC (now NISCAIR), New Delhi	Organised **seminars & workshops** on user education.	Training scientists in reference use, citation styles.
DRTC, Bangalore	Promoted research & training in **information science**.	User study workshops for academic libraries.
IASLIC, Calcutta	Organised **National Conference on User Education** (Waltair, 1981).	Produced a volume of papers on user education.
IARI, New Delhi	Designed special **course** on library use, reference compilation, paper writing, proof correction.	Integrated user education into agricultural research training.

Problems in India

- Efforts were voluntary & sporadic, not systematic.
- No national guidelines (e.g., UNISIST model not fully adopted).
- Lack of collaboration between librarians and educators.

3.9 Objectives of User Education

The **general objective** of user education is to create awareness of **library resources, services, and facilities**, aligned with the goals of the parent institution.

Key Objectives

Objective	Explanation	Examples
Awareness of sources & services	Familiarise users with print, digital, and reference resources.	1. Knowing where to find journals in science libraries. 2. Awareness of e-databases in medical libraries. 3. Using library OPAC for quick searches.
Integration with academic disciplines	Link library skills with course content and research needs.	1. Engineering students taught patent search methods. 2. History students trained to use archival sources. 3. Medical students guided in PubMed search.

Skill development	Train users in identifying, retrieving, and evaluating information.	1. Understanding classification systems (DDC, UDC). 2. Learning keyword vs. subject heading searches. 3. Evaluating reliability of online sources.
Promote independent learning	Encourage students to use the library confidently without constant staff help.	1. Framing research questions independently. 2. Preparing bibliographies. 3. Writing literature reviews effectively.

Scrivener's Suggested Aims (for University Libraries)

According to Scrivener, a user education programme should help students:

1. **Understand library arrangements** – physical (layout), bibliographical (catalogue), and conceptual (classification system).
    - Example: Knowing that 500 = Pure Science in Dewey system.
2. **Know relevant sources** – ability to select appropriate references in different contexts.
    - Example: Using Chemical Abstracts for chemistry research.
3. **Interpret information needs** – framing questions properly.
    - Example: Converting "I need something on pollution" → "Air pollution control in urban India (case studies after 2000)".
4. **Use search techniques** – strategies for retrieving information efficiently.
    - Example: Boolean search in Scopus (AND, OR, NOT).
5. **Evaluate & present information** – critically assess quality of sources and compile results.
    - Example: Comparing two journal articles for credibility and citing them correctly.

Orientation vs. Instruction

Aspect	Library Orientation	Library Instruction
Purpose	Make users aware of library facilities and services.	Train users to retrieve and use information for specific needs.
Focus	General layout, services, rules, and introduction.	Search skills, databases, reference sources, and citation methods.
Example Activities	1. Guided library tour. 2. Introductory video. 3. General service brochure.	1. Workshop on Scopus/PubMed. 2. Tutorial on citation tools. 3. Training in subject databases.

3.10 Methods of User Education

Learning is influenced by **motivation, activity, understanding, and feedback**. No single method fits all, hence a **blended approach** is best.

Categories of Methods

Category	Description	Examples
Group Instruction	Teaching to a large/small group. Suitable for basic orientation.	1. Lectures on library services. 2. Guided library tours. 3. Demonstrations of OPAC.
Individual Instruction	One-on-one or self-paced learning. Suitable for advanced learners.	1. Reference desk queries. 2. One-on-one research consultation.

		3. Programmed tutorials (online modules).
Mixed/Blended Methods	Combination of group and individual approaches.	1. Workshop + hands-on practice. 2. Lecture + online video modules. 3. Group training + personal guidance.

Teaching Media

Media Type	Use	Examples
Visual	Strengthens memory by showing resources.	1. Charts on classification systems. 2. PowerPoint presentations. 3. Maps for locating subject sections.
Audio	Useful for verbal explanations and instructions.	1. Recorded lectures. 2. Audio guides for library tours. 3. Podcasts on research tips.
Audio-Visual	Combines both, more effective.	1. Interactive tutorials. 2. YouTube-style training videos. 3. Simulations of online search.

Interaction in Learning

Type	Explanation	Example
Teacher–Student Interaction	Librarian explains and students ask questions.	Lecture on “Using Google Scholar effectively.”
Student–Teacher Interaction	Students actively bring problems to discuss.	Student asks librarian to guide search strategy for thesis.
Student–Student Interaction	Peer learning and collaboration.	Group exercise: finding 3 reliable sources on a topic.

3.11 Forms of User Education Programmes

3.11.1 Lecture

- **Description:**
  - Most common method for large groups.
  - Uses both **audio (speech)** and **visual (board, projector, slides)** aids.
- **Advantages:**

1. Good for introducing general concepts.
2. Economical for large groups.
3. Allows some interaction and feedback.

- **Limitations:**

1. Speed cannot be controlled by learners.
2. Repetition not possible unless handouts are given.
3. Not suitable for teaching bibliographic details.

- **Best Use:**
  - General introduction to **information retrieval concepts**.
  - Suitable for **mature learners** (postgraduates, researchers).

Example: Introductory lecture on "Using Dewey Decimal Classification in Science Libraries."

3.11.2 Seminars, Tutorials, and Demonstrations

- **Description:**
  - For **small groups**; more **interactive**.
  - Encourages **active participation**.
- **Advantages:**

1. Informal atmosphere encourages questions.
2. Feedback and motivation possible.
3. Practical exercises connect theory to real tools.

- **Limitations:**
  - Requires more **time** and **staff involvement**.
  - Needs access to **library tools/resources**.
- **Best Use:**
  - Training in **search techniques** or **use of specific databases**.
  - Practical sessions in the library environment.

Example: Demonstrating **PubMed search strategies** to medical students.

3.11.3 Guided Tour

- **Description:**
  - Traditional method for **new users**.
  - Staff-led walk through library facilities.
- **Advantages:**

1. Familiarises students with **physical layout**.
2. Helps beginners who lack motivation to explore.

- **Limitations:**

1. Time-consuming for library staff.
2. Often less engaging for students.

- **Improved Method:**
  - **Self-paced printed or audio tours** + practical tasks.
  - Users locate books, use OPAC, or photocopy as part of exercises.

Example: First-year undergraduates take a **self-guided orientation tour** using a printed map with QR codes.

3.11.4 Audio-Visual Methods

- **Description:**
  - Use of **slides, transparencies, tape/slide sets**, and illustrations.
  - Combine text, sound, and visuals.
- **Advantages:**

1. Flexible and available on demand.
2. Easy to update compared to books.
3. Clarity in presentation.

- **Best Use:**
  - Step-by-step demonstrations (e.g., “How to use the Online Catalogue”).

Example: A slide-tape presentation on “Steps in Keyword Searching.”

3.11.5 Video-tapes

- **Description:**
  - Recordings that combine **motion + sound**.
  - Stored on tapes, discs, or cassettes.
- **Advantages:**

1. Can be reused many times.
2. Best teachers can be recorded once and used repeatedly.
3. Works for different group sizes (internal TV system).

- **Limitations:**

1. Lack of compatibility between formats.
2. Updating is time-consuming.
3. Students cannot interrupt to ask questions.

- **Best Use:**
    - Orientation videos for distance learners or online induction.

Example: A pre-recorded video on "Using JSTOR for Academic Research."

3.11.6 Programmed Instruction

- **Description:**
    - Learners progress at their own pace.
    - Uses books, slides, or **Computer-Assisted Instruction (CAI)**.
- **Advantages:**

1. Self-paced learning with instant feedback.
2. Records learner progress.
3. Encourages **active participation**.

- **Limitations:**

1. Students may feel isolated.
2. Extrovert learners may miss group interaction.

- **Best Use:**
    - Online tutorials, quizzes, or computer-based training.

Example: Interactive **e-learning module on citation styles (APA/MLA/Chicago)**.

3.11.7 Signs and Informational Graphics

- **Description:**
    - Visual aids for **direction, orientation, and instruction**.
    - Includes signs, posters, maps, pictograms.
- **Advantages:**

1. Overcomes **physical barriers** in the library.
2. Long-term investment if well-designed.
3. Immediate help without staff involvement.

- **Limitations:**
    - Poorly designed signs can confuse rather than guide.
- **Best Use:**
    - For **wayfinding** and **self-guided learning**.

Example: Color-coded directional signs in a multi-floor library showing subject sections.

3.12 Information Technology and User Education

Computers and networks have revolutionised user education. With the rise of **online databases, digital libraries, and networked information systems**, users require new forms of **training, guidance, and practice** to effectively retrieve information.

3.12.1 Groups Involved in Online Education

Several stakeholders participate in online user education, each with different motivations:

1. **Database Producers**
    - e.g., *Chemical Abstracts (ACS), Index Medicus (NLM)*
    - Motive: Promote usage of their database → financial gain, reputation.
2. **System Operators**
    - Provide platforms to access databases.
    - Motive: Train users to ensure effective system utilisation.
3. **Institutions (Libraries & Information Centres)**

- Offer online training to students, faculty, researchers.
- Motive: Support academic work and research productivity.

4. **Library Schools**
   - Educate future librarians in online retrieval systems.
   - Motive: Build professional competence.
5. **Intermediaries (Information Professionals/Search Experts)**
   - Trained searchers who assist end-users.
   - Motive: Deliver accurate, efficient searches across multiple fields.
6. **End Users (Researchers, Students, Professionals)**
   - Final consumers of online information services.
   - Motive: Save time, retrieve accurate results, and build self-reliance.

3.12.2 Orientation vs. Instruction

Component	Focus	Objective	Example
Orientation	Awareness of systems	Introduce existence of online retrieval & available databases	A library workshop showcasing *MEDLINE, JSTOR, Scopus*
Instruction	Practical training	Teach detailed use of search interfaces, operators, filters	Hands-on session on advanced PubMed searching

3.12.3 Main Goals

- **For End Users**
  - Enable independent online searches in their own subject areas.
  - Retrieve relevant information whenever required.
- **For Intermediaries**
  - Train them to conduct **multi-disciplinary searches**.
  - Use diverse databases across different platforms effectively.

3.12.4 Methods of Online User Education

In addition to **lectures, demonstrations, seminars, and audiovisuals** (discussed earlier), online training requires methods that allow **interactive, real-time practice**.

1. **Hands-on Training (Learning by Doing)**
   - Users directly practice on live systems.
   - Encourages motivation and active involvement.
   - *Example:* A researcher performs actual MEDLINE searches during training.
2. **Observation and Apprenticeship**
   - New intermediaries watch expert searchers, then try independently.
   - Builds professional expertise.
3. **System-Based Aids**
   - Built-in guidance and help feature.
   - *Example:* MEDLINE offers interactive prompts during searches; SDC's **Database Index (DBI)** suggests the most relevant database.
4. **Workshops and Seminars**
   - Structured short-term training sessions.
   - Cost-effective for training groups.
5. **Computer-Assisted Instruction (CAI)**
   - Tutorials, simulations, and self-paced modules.
   - *Example:* Online tutorials on Boolean searching, citation management.

3.12.5 Factors Influencing Method Choice

- **Learning Effectiveness**: Interactive training yields the best results.
- **Availability of Equipment**: Access to terminals, internet, licensed databases.

- **Cost of Use**: Training may be limited by search charges, licensing fees.

3.13 Evaluation of a User Education Programme

Evaluation is an essential component of any user education programme, as it determines whether the intended objectives have been achieved and provides feedback for improvement. It is concerned with the collection, analysis, and interpretation of information about the programme's effectiveness in terms of user learning, attitudes, and behaviour.

3.13.1 Meaning and Purpose of Evaluation

- Evaluation involves comparing the **observed effects** of a programme with its **expected outcomes**.
- It helps in rational **decision-making** for improvement of instructional methods, content, and delivery.
- According to educational researchers, evaluation focuses on three aspects:
    1. **Input** – resources, teaching potential, instructional design.
    2. **Process** – methods, teaching-learning interaction, influencing factors.
    3. **Output** – skills, attitudes, knowledge, and behavioural changes in users.

Purpose:

- To assess the extent to which objectives of user education are realised.
- To measure the development of **library use skills, information literacy, and attitudes towards libraries**.
- To identify strengths, weaknesses, and unexpected effects of the programme.
- To guide **continuous improvement**.

3.13.2 Methods of Evaluation

Three major approaches are generally used:

1. **Psychometric Method**
    - Based on *controlled experimental designs*.
    - Users are divided into experimental and control groups.
    - Both groups undergo pre-tests and post-tests (achievement tests, attitude scales).
    - Effectiveness is measured by performance differences.
    - Limitation: Only measures pre-specified goals, ignores unexpected outcomes.
2. **Sociological or Management Method**
    - Focuses on organisational changes caused by user education programmes.
    - Uses interviews and questionnaires.
    - Looks at impact on the institution, not just individuals.
    - Useful in understanding structural and management implications.
3. **Illuminative (Responsive) Method** – *Parlett & Hamilton*
    - Focuses on the actual implementation of a programme.
    - Allows study of unexpected results.
    - Emphasis on describing and understanding conditions, not just testing.
    - Uses observational studies, explorative interviews.
    - Concerned with how participants are affected by the programme in practice.

3.13.3 Need for Evaluation of Library User Education

- Earlier, evaluation was often neglected in user education research.
- **Brewer and Hills (1976)** urged librarians to take evaluation more seriously as part of their professional teaching responsibility.
- Bibliographies and handbooks on user education show that evaluation has been **less documented** than other aspects.
- Example: **Chalmers University of Technology Library** conducted systematic evaluation studies on user education programmes.

- Evaluation helps in:
    - Measuring real impact of instructional efforts.
    - Identifying gaps between intentions and outcomes.
    - Providing feedback to improve design, methods, and resources.
    - Ensuring accountability to institutions and users.

3.14 Information Literacy

Concept

- First conceived by **Paul Zurkowski (1974)**, President of the Information Industry Association.
- Defined by **ALA Presidential Committee (1989)**: Information literate persons can recognize when information is needed and could **locate, evaluate, and use** information effectively.
- Evolved due to **information explosion**:
    - **Paucity of information** → decisions lack completeness.
    - **Excess of information (information smog)** → difficult to filter relevant information.
- Requires competence in handling different tools, formats, and media of information.

Related Literacies

1. **Computer Literacy** – Ability to use computers to produce, process, store, and retrieve information.
2. **Technology Literacy** – Broader; includes handling all ICT components.
3. **Media Literacy** – Ability to access, store, organise, search, and communicate information in print, TV, internet, etc.
4. **Network Literacy** – Ability to post, access, transmit, and use information on networks (Internet, Intranet).
5. **Digital Literacy** – Competence in handling information in digital formats (easy transmission, access, and conversion from print to digital).
6. **Library Literacy** – Ability to use libraries effectively: knowing information sources, reference tools, search engines; equated with **search and analytical skills**.

Comprehensive Definition (Prague, UNESCO Experts Meeting)

- IL = knowledge of one's information concerns and needs, ability to identify, locate, evaluate, organize, create, use, and communicate information.
- IL is a prerequisite for effective participation in the information society.
- Recognised as part of the basic human right of lifelong learning.

3.15 Historical Background of Information Literacy

- **1974** – Concept of Information Literacy (IL) introduced by **Paul Zurkowski** due to exponential information boom and rising dependence on information.
- **1980s** – Rise of personal computers + developments in telecommunication = increase in information exchange.
    - Concept of **Information Society** emerged in developed countries.
    - Recognition of the need to prepare citizens to use varied information resources.

ALA & NFIL (USA)

- **ALA Presidential Committee (1989)** gave a widely accepted definition of IL.
- **National Forum on Information Literacy (NFIL, 1989)** created:
    - Represented 65+ organisations (education, industry, governance, etc.).
    - Aimed at awareness through announcements, advertisements, seminars, research.

1990s: Global Spread

- **SCONUL (UK)** – introduced **Seven Pillars of Information Literacy** model for higher education.
- Other models proposed:
    - **Kulthau Information Search Model**
    - **Empowering 8 Model**

    - **Big6 Skills Model**
    - **Pitts/Stripling Research Model**

2000s: Standards and Guidelines

- **ACRL (2000)** – introduced **standards, performance indicators, and learning outcomes** for assessing student IL.
- **IFLA (2002)** – replaced User Education Roundtable with an IL section; prepared **International Guidelines on Information Literacy**.

Major Declarations

- **Prague Declaration (2003, UNESCO + NFIL + NCLIS):**
    - Declared IL as a **basic human right in lifelong learning**.
    - Essential for **social, economic, and cultural development**.
- **Alexandria Proclamation (2005, IFLA Colloquium, Egypt):**
    - Stressed that IL + lifelong learning = foundations of the information society.
    - Called on governments & agencies to:
        - Encourage IL conferences & seminars in different sectors.
        - Train LIS, education & archive professionals in IL.
        - Integrate IL into **formal & continuing education** (agriculture, economics, business, etc.).
        - Make IL & lifelong learning **mandatory in education accreditation standards**.

3.16 Information Literacy Models

Purpose of Models

- Provide framework for designing IL programmes.
- Assure learning as active, creative, critical-thinking process.
- Used for developing and evaluating IL curricula.

1. SCONUL – Seven Pillars of Information Literacy (1999)

Seven essential skills:

1. Recognise need for information
2. Distinguish ways to address information gap
3. Construct strategies to locate information
4. Locate and access information
5. Compare and evaluate sources
6. Organise, apply and communicate information appropriately
7. Synthesise and build upon information to create new knowledge

2. Kulthau's Information Search Process (ISP)

- Based on studies of students' information behaviour.
- Methods: interviews, case studies, writing assignments.
- Proposed **three approaches**:
    - **Source/library model** – library/resource as focus.
    - **Pathfinder/search strategy model** – structured strategies to reach sources.
    - **Process model (user-centred)** – stresses user's search process, promotes critical thinking & problem solving.
- Process model = empowerment of users in information use.

3. Irving's Nine Steps Information Skills Model

- Guides students in completing academic assignments.
- Extends use of IL beyond academics → workplace & personal life.
- Emphasises structured progression through 9 steps.

4. Stripling/Pitts Research Process

- Developed by two high-school media specialists.
- Combines **content + process** for structured learning.
- Key ideas:
    - Identify learner's current state of knowledge ("student's mental model").
    - Teachers/librarians challenge and expand it.
    - Students learn to make sense of information, connect learning with subject developments, stay updated.
- **Assessment** placed as essential & contextual to real-life learning.

3.17 Information Literacy Standards (ACRL, 2000)

- Developed for **higher education**.
- Provide **Performance Indicators (PI)** & **Learning Outcomes**.
- Help in developing **curriculum & assessment of IL skills**.

Five Core Standards

Standard	Focus
IL-1	Determines the nature & extent of information needed
IL-2	Accesses information effectively & efficiently
IL-3	Evaluates information & sources critically; incorporates into knowledge base
IL-4	Uses information effectively to accomplish a purpose (individually or in groups)
IL-5	Understands economic, legal & social issues; uses information ethically & legally

Source: https://egyankosh.ac.in/bitstream/123456789/35346/5/Unit-11.pdf

3.18 Methods of Resource Sharing

Areas Amenable to Resource Sharing

a) Inter-Library Loan (ILL)

Library requests → supplying library locates material & informs.
Delivery: courier/post/pickup.
In e-environment → request & info via e-mail; hard copies via traditional mode.

b) Acquisition (Cooperative Acquisition)

Libraries agree on **division of subject areas** for book purchase.
Prevents duplication, rationalises collection.
Cooperative journal subscription:
Local arrangement between libraries.
Consortia agreements with publishers (esp. in special libraries).
Networked environment → access to latest releases & faster ordering.

c) Cataloguing (Centralised/Cooperative)

Proofs sent to central libraries (e.g., British Library, Library of Congress).
They catalogue/classify & publish data (appears on verso of title page).
In networks → online cataloguing, editing & downloading records.
Saves duplication → only local mark/location needs adding.

Catalogue-based Cooperative Services:

Database service
Document supply service
Collection development
Communication-based services (referral, e-mail, bulletin board, etc.)

d) Personnel Sharing

Sharing expertise of skilled staff.
Possible exchange/trading of personnel & even **user mobility**.

e) Information Services

Specialised institutions generate information products & services.

Easily shared via e-mail & networking if in machine-readable form.

f) Translation Services

Commissioning cooperative translations.

Sharing already available translations.

Creation of **translation banks** (machine-readable).

g) Development of Special Collections

Libraries agree to procure docs in specific subject areas.

Prevents overlap → encourages **specialisation**.

Networks make exchange smoother & faster.

h) Cooperative Storage

Less-used material stored in central/shared location.

Libraries borrow as needed & return after use.

Saves space & reduces duplication.

Table: Areas of Resource Sharing

Area	Key Features	Benefit
Inter-Library Loan (ILL)	Request & supply of docs via post/e-mail	Access beyond own collection
Cooperative Acquisition	Division of subject areas; shared journal subscriptions	Avoid duplication; cost saving
Cataloguing	Centralised/online cataloguing, downloadable records	Saves effort; consistency
Catalogue-based Services	Databases, document supply, referral, comm. tools	Wider access to info & services
Personnel Sharing	Exchange of experts & staff	Better expertise utilisation
Information Services	Sharing specialised info products	Wider reach of generated knowledge
Translation Services	Shared translations; translation banks	Overcomes language barriers
Special Collections	Libraries specialise in agreed subjects	Stronger subject depth
Cooperative Storage	Central/shared storage of rarely used docs	Space saving; reduced duplication

3.19 What Makes Resource Sharing Successful?

- Success depends on **acceptance by authorities & users**.
- Should be seen not just as a compulsion but as **only effective way to access wider information**.
- Libraries → new role as **information managers** in addition to custodians.
- Effective networking required at **local, regional, national, international levels**.
- Needs constant development & updating of **support tools** (union catalogues, directories, etc.).

3.20 Prerequisites for Resource Sharing

- **Concerns of users**:
  - Fear restriction of scholarly pursuits.
  - Fear fewer books will be bought for lending.
  - Concern cost of sharing > cost of purchase.
- **Reality**:
  - Resource sharing gives wider access if **well-planned systems** adopted.
- **Principle**: Based on **give & take**, requires sustained effort.

- **Key activities**: Inter-library loan, document delivery, exchange of publications, online networks.
- **Requirements**:
  - Develop suitable **protocols**.
  - **Standardisation** of data exchange formats.
  - Convince users about **long-term advantages**.

3.21 Barriers to Resource Sharing

- **a) Staff Resistance**
  - Fear/unwillingness among staff.
  - Reluctant to take extra burden (ILL, delivery, etc.).
- **b) Authority Restrictions**
  - Some authorities prohibit sharing library materials.
- **c) Lack of Facilities**
  - No copying machines, scanning, or electronic delivery systems.
- **d) Communication Problems**
  - Distance between libraries → delays.
  - Poor telecom/IT infra in developing countries → weak links.
- **e) Lack of Funds**
  - No budget for automation, networking, ILL, etc.

Table: Barriers to Resource Sharing

Barrier	Cause	Impact
Staff Resistance	Fear of new work burden	Delay/inefficiency in ILL & services
Authority Restrictions	Rules prohibiting sharing	Limits access to resources
Lack of Facilities	No photocopy/e-doc delivery infra	Resource sharing not practical
Communication Problems	Distance/poor networks	Breakdowns in cooperation
Lack of Funds	Insufficient budget for automation & networking	No system development

3.22 Interlibrary Loan (ILL)

- **Definition**: Service that allows patrons of one library to borrow materials from another.
- **Other terms**: Document delivery, document supply, inter-lending, inter-library services, inter-loan, resource sharing.

Methods

- Borrowing library identifies potential lending libraries.
- Lending library delivers item **physically or electronically**.
- Borrowing library delivers item to user and arranges return.
- Sometimes **fees** apply.
- Libraries decide which materials are eligible (licenses may restrict journal/database ILL).
- **ISO 10160 & 10161**: Standardized terminology and protocols for ILL systems.

3.23 History of Interlibrary Loan

Early Developments

- **8th century CE**: Informal borrowing/lending in Western Europe.
- **16th century**: Nicolas-Claude Fabri de Peiresc tried (unsuccessfully) to link Louvre Library & Vatican Library.

USA Milestones

- **1876**: Samuel Swett Green (Massachusetts librarian) proposed ILL system based on European models.
- **1886**: Joseph C. Rowell (UC Berkeley) sought permission for ILL.
- **1894**: UC Berkeley's first ILL with California State Library.
- **1917**: American Library Association (ALA) established national ILL code.
- **1994**: ALA's RUSA issued Interlibrary Loan Code for U.S.
- **1997**: Colorado State Univ. developed RapidILL after journal loss in Spring Creek flood → Later (2019) acquired by Ex Libris.

International Milestones

- **1924**: China – Shanghai Library Constitution introduced ILL policies.
- **1927**: IFLA (International Federation of Library Associations) founded to support resource sharing.
- **1954**: IFLA published *International Resource Sharing & Document Delivery Guidelines*.
- **1935**: UK – Kate Edith Pierce chaired East Midlands Regional Library Bureau; Carnegie Trust supported "Inter-Library Lending."
- **1960s**: Ohio, USA → development of OCLC (Online Computer Library Center).

Table: Major Historical Milestones of Interlibrary Loan

Year	Event / Person	Region	Contribution
1876	Samuel Swett Green	USA	Proposed ILL model
1886	Joseph C. Rowell	USA	Sought ILL program (UC Berkeley)
1894	UC Berkeley & California State Library	USA	First formal ILL
1917	ALA	USA	National ILL code
1924	Shanghai Library Constitution	China	First formalized ILL
1927	IFLA established	International	Promoted resource sharing
1935	Kate Edith Pierce, East Midlands Bureau	UK	First regional ILL system
1954	IFLA guidelines	International	Standard ILL principles
1960s	OCLC founded (Ohio)	USA	Networked catalogues & ILL
1994	ALA (RUSA) ILL Code	USA	Updated national guidelines
1997	RapidILL (CSU)	USA → Global	Fast resource sharing system
2019	Ex Libris acquired RapidILL	Global	Commercial expansion

3.24 Resource Sharing Networks

- **Definition**: Voluntary associations of libraries (regional, national, or thematic) created to facilitate **resource sharing** (ILL, document delivery, joint acquisitions, cooperative storage, etc.).
- **IFLA (International Federation of Library Associations and Institutions)** → provides **international guidelines** for ILL policies.

3.24.1 North America

- **OCLC (Online Computer Library Center)**: Largest global library cooperative, used by academic & public libraries.
- **RLG (Research Libraries Group)**: Merged with OCLC in 2006.
- **CRL (Center for Research Libraries)**: Buy-in membership system for research libraries.
- **LVIS (Libraries Very Interested in Sharing)** & **Amigos**: Large-scale cooperative sharing groups.
- **Medical Libraries**: National Network of Libraries of Medicine (NNLM).
    - **DOCLINE**: NLM's automated routing system for medical ILL.

3.24.2 Africa

- **SABINET** (South African Bibliographic and Information Network, est. 1983): Resource sharing & collection development.
- **GILLDDNET** (Ghana Inter-Library Lending and Document Delivery Network): First in West Africa, later replaced (2004) by **CARLIGH** (Consortium of Academic and Research Libraries in Ghana).

3.24.3 Central & South America

- **ISTEC** (Consorcio Iberoamericano para la Educación en Ciencia y Tecnología): 50 institutions across 17 countries (Latin America + Iberian Peninsula).
    - Uses **Celsius software** for resource sharing.
- **CBUES** (Consorcio de Bibliotecas Universitarias de El Salvador): El Salvador university consortium.
    - Some links to Costa Rica, Nicaragua, Mexico, Panama (though not listed officially).

3.24.4 Europe

- **France**: *PEB ILL network* → 300+ libraries, SUPEB ILL software.
- **Germany**: *Gateway Bayern (GB)* → Bavarian libraries, includes Bavarian State Library.

3.24.5 Asia-Pacific

- **New Zealand**: National Library of New Zealand (Te Puna Mātauranga o Aotearoa).
- **India**: DELNET (*Developing Library Network*, formerly Delhi Library Network) → supports India & South Asia.
- **Japan**: National Diet Library → domestic & international hub for Japanese-language materials.
- **China**: CALIS (*China Academic Library & Information System*, est. 1998, Beijing) → academic library consortium enabling ILL.

Table: Major Resource Sharing Networks

Region	Network / Consortium	Established / Notes
North America	OCLC	Largest worldwide cooperative
	RLG	Merged with OCLC (2006)
	CRL	Buy-in membership model
	LVIS, Amigos	Cooperative sharing groups
	NNLM + DOCLINE	Medical resource sharing
Africa	SABINET	South Africa, 1983
	GILLDDNET → CARLIGH	Ghana, replaced in 2004
Central & South America	ISTEC	50 institutions, 17 countries, uses Celsius software
	CBUES	El Salvador (links across Central America)
Europe	PEB (France)	300+ libraries, SUPEB ILL software
	Gateway Bayern (Germany)	Bavarian State Library system
Asia-Pacific	National Library of NZ	Resource sharing hub
	DELNET (India)	India & South Asia
	National Diet Library (Japan)	Japanese + international materials
	CALIS (China)	Academic libraries, launched 1998

3.25 Ranganathan's Classification of Reference Services

- Reference service = info given through personal contact with reference librarian.
- **Types:**
    - Ready Reference Service → short, immediate answers.

    - Long Range Reference Service → detailed, time-consuming.
- ALA terms:
    - Direct Reference = Ready Reference.
    - Indirect Reference = Long Range Reference.

3.25.1 Ready Reference Service

- Defined by Ranganathan = service answered in **short time (≈1 min)**.
- Nature = quick fact-finding, simple queries, short answers.
- Used by → scholars, dignitaries, delegates, busy patrons.
- Sources used = reference books, catalogues, online/offline search, databases.

Queries include:

- Direct and specific.
- Simple in nature.
- Answered on librarian's desk.
- Short factual responses (within 5 min).

Sources for Ready Reference:

- Dictionaries
- Directories / Handbooks
- Census reports
- Yearbooks / Annuals
- Biographies
- Gazetteers
- Atlases
- Encyclopedias
- Publications & org websites
- Authentic web sources
- Online publisher sources & databases

3.26 Need of Ready Reference Service

- Readers usually know their study-related books, but sometimes queries go beyond regular sources.
- Reference sources (dictionaries, encyclopedias, directories, etc.) are not always familiar to users as they are arranged differently.
- Creates the **need for librarian assistance**.
- In the present context, users (students, researchers, others) often use **email/social media** to contact librarians for quick ready reference queries.

3.27 Long Range Reference Service

- Stressed by Ranganathan as more used in public & special libraries.
- Takes **long time** (more than 5 minutes) to provide service.
- Required for **special readers demanding detailed information**.
- Based on referencing **all possible sources**: reference books, literature, reports, monographs, periodicals (print/online).
- May involve searching other local/national libraries if info not found in own collection.
- A ready reference query today may become quick tomorrow due to librarian's **experience & skill**.
- Expanded scope → bibliographic service, referral service, translation service.

3.28 Need of Long-Range Reference

a) **Saves Reader's & Researcher's Time** → librarian assists in searching sources/procedures.
b) **Knowledge Explosion** → huge literature produced; librarian helps trace documents effectively.
c) **Complexity of Sources** → arrangement, styles, language barriers; librarian interprets for users.

d) **Need for Other Libraries' Sources** → no library is self-sufficient; librarian facilitates access via interlibrary support.

3.29 Levels of Reference Service

Ready Reference

- Less than 5 minutes.
- Uses designated reference collection.
- Done while patrons wait.
- Always results in an answer.
- Simple/factual queries, short answers.
- Needs quick access to ready reference tools.

Long Range Reference

- Takes 5–30 minutes (may extend to more than a day).
- Usually results in an answer or referral.
- Simple question/simple answer.
- Needs sophisticated resources.
- Involves searching, not analysis.

Research (Extended Reference)

- Labour-intensive: from a day to a week.
- Involves secondary research by staff.
- Provides research findings, not direct answers.
- Complex question/complex answer.
- Requires many sources + analysis.

Referral

- **Question Referral**: One librarian refers the *question* to another librarian/library (control remains with original librarian).
- **Client Referral**: User is referred to another librarian/source → original librarian is no longer involved.

3.30 Five Laws of Library Science and Reference Services

First Law – Books are for Use

- Reference service ensures max. use of books.
- Librarian acts as **friend, thinker, guide**, attracting users to resources.

Second Law – Every Reader his Book

- Reference service helps readers find documents.
- Readers also share responsibility to know sources/facilities.

Third Law – Every Book its Reader

- Books need librarians to connect with readers.
- Methods: exhibitions, new arrivals, web/social media, translation, indexing, abstracting, bibliographies.

Fourth Law – Save the Time of the Reader

- Efficient & quick service aids scholars and researchers.

Fifth Law – Library is a Growing Organism

- Reference services adapt with growth in collection, readers, and technology.
- Good reference service → more readers → growth in staff, infrastructure, and resources.

3.31 Evaluation of Reference Service

Criteria include:

- Access, Equity, Response time, Impact.
- Convenience, Value, Usefulness.

- Efficiency, Effectiveness (meeting & anticipating needs).
- Approachability, Reliability, Empathy.
- Interest, Listening/Enquiring, Follow-ups.
- Service Quality, Tangibles, Assurance.
- Accuracy of answers.
- User satisfaction, repeat users.
- Cost per transaction, completion time.
- Role of technology.

Source: https://ebooks.inflibnet.ac.in/lisp4/chapter/reference-service-concept-need-types-theories-trends/

3.32 Reference Sources

Almanacs

- Provide facts, statistics, tables, lists on people, places, events, organizations, culture, sports.
- Cover broad time spans (Yearbooks → specific year).
- Useful for quick fact-checking.

Examples:

1. The World Almanac and Book of Facts
2. Whitaker's Almanack
3. Time Almanac
4. The Statesman's Yearbook
5. Old Farmer's Almanac
6. CIA World Factbook

Atlases

- Collections of maps (political, physical, thematic, cultural, road, etc.).
- Can be world/general or subject specific.

Examples:

1. National Geographic Visual Atlas of the World
2. Times Comprehensive Atlas of the World
3. Oxford Atlas of the World
4. Rand McNally Road Atlas
5. The Penguin Atlas of World History
6. Collins World Atlas

Bibliographies

- Comprehensive lists of resources by subject, person, place, etc.
- May include annotations or descriptions.

Examples:

1. Sourcebook for Research in Music – Allen Scott
2. Women in the United States Military – Judith Bellafaire
3. MLA International Bibliography
4. Bibliography of American Literature – Jacob Blanck
5. Oxford Bibliographies Online
6. National Bibliography of India

Biographies

- Information on lives of people (brief entries or detailed books).
- Can be general, thematic, or regional.

Examples:

1. American National Biography
2. Dictionary of National Biography (UK)

3. Current Biography Yearbook
4. Biography and Genealogy Master Index
5. Notable American Women
6. Marquis Who's Who

Chronologies / Timelines

- Present events in sequential order.
- Helpful for understanding historical progression.

Examples:

1. A Chronology of Photography – Paul Lowe
2. Timetables of History – Bernard Grun
3. Oxford Chronology of English Literature
4. The Hutchinson Chronology of World History
5. Chronology of World War II
6. BBC History Timelines

Dictionaries

- Define words, provide meanings, synonyms, usage, pronunciation.
- Variants: slang, quotations, subject-specific.

Examples:

1. Merriam-Webster's Collegiate Dictionary
2. Oxford English Dictionary (OED)
3. A Dictionary of Geology and Earth Sciences – Michael Allaby
4. A Dictionary of Film Studies – Annette Kuhn & Guy Westwell
5. Collins English Dictionary
6. Chambers Dictionary

Directories

- Organized lists of people or organizations with contact details.
- Used for addresses, emails, phone numbers.

Examples:

1. Writers Directory
2. Directory of Corporate Affiliations
3. Gale Directory of Publications and Broadcast Media
4. Europa World Year Book
5. Occupational Outlook Handbook (as career directory)
6. International Who's Who

Encyclopedias

- Comprehensive coverage of topics, general or subject-specific.
- Alphabetically arranged entries with summaries or detailed notes.

Examples:

1. Encyclopaedia Britannica
2. World Book Encyclopedia
3. Encyclopedia Americana
4. Oxford Reference Online
5. McGraw-Hill Encyclopedia of Science & Technology
6. Stanford Encyclopedia of Philosophy

Handbooks / Manuals

- Facts, guidelines, instructions about a subject.
- Portable, quick reference guides.

Examples:

1. The Grant Writer's Handbook – Crawley & O'Sullivan
2. CRC Handbook of Chemistry and Physics
3. APA Publication Manual
4. MLA Handbook
5. Oxford Handbook of Political Science
6. Handbook of Psychological Assessment

Indexes

- Lists of citations or references pointing to information.
- Arranged alphabetically/numerically, guide to location of info.

Examples:

1. Rock Song Index – Bruce Pollock
2. Reader's Guide to Periodical Literature
3. Poole's Index to Periodical Literature
4. Science Citation Index
5. Social Sciences Citation Index
6. Art Index

Chapter 4: Digital Libraries and E-Resources

4.1 Digital Library

- A **digital library** (online library, internet library, digital repository, library without walls) = database of digital resources accessible via the internet.
- Resources include **text, images, audio, video, digital documents, digitized content, and born-digital content**.
- Functions: **store, organize, search, retrieve, provide access**.
- Collections vary in **size & scope**, maintained by **individuals or organizations**.
- Content may be **stored locally** or **accessed remotely**.
- Ensure **interoperability & sustainability** for information exchange.

4.2 History of Digital Libraries

- **1895 – Paul Otlet & Henri La Fontaine (Mundaneum):** systematic cataloguing of world knowledge.
- **1945 – Vannevar Bush (Memex):** vision of rapid access machine with screens, buttons, keyboard.
- **1960s – J. C. R. Licklider:** *Libraries of the Future*, "**procognitive system**" (knowledge corpus + question + answer).
- **1980s – Focus on automation:** OPAC replaced card catalogs → enabled **resource sharing & online access**.
- **ERIC (1964):** first major digital library; online via DIALOG (1969).
- **1994 – NSF/DARPA/NASA Digital Libraries Initiative ($24.4M):**
  - 6 universities: Carnegie Mellon, UC Berkeley, Michigan, Illinois, UCSB, Stanford.
  - Stanford research by **Brin & Page** → founded **Google**.
- **Models:** DELOS Reference Model, 5S Framework.

4.3 Terminology

- **Digital Library:** term popularized by 1994 NSF/DARPA/NASA Initiative.
- **Virtual Library:** initially same, now refers to **aggregated/distributed content systems**.
- **Electronic Library:** early interchangeable term.
- **Hybrid Library:** combines **physical + digital collections** (e.g., Library of Congress *American Memory*).
- **Born-Digital vs Digitized:** distinction between originally digital content & scanned/converted physical material.
- **Long-term Archives:** e.g., **arXiv, Internet Archive**.
- **Wide Access Providers:** e.g., **Digital Public Library of America (DPLA)**.

4.4 Types of Digital Libraries

4.4.1 Institutional Repositories

- Built by academic libraries → contain **books, theses, papers, born-digital works**.
- Support **open access** (vs. commercial journal restrictions).
- Used for **archiving, organizing, and searching** institutional output.
- Popular open-source software:
  - **DSpace, EPrints, Greenstone (GSDL), Digital Commons, Fedora Commons (Islandora, Samvera).**

4.4.2 National Library Collections

- Based on **legal deposit laws** → publishers must submit copies of all works.

- Extended to **electronic documents** (e.g., Australia Copyright Act 1968 amendment, 2016).
- Examples:
  - **British Library Publisher Submission Portal**
  - **Deutsche Nationalbibliothek** (Germany)
  - **Australian National eDeposit (NED):** allows **remote public access** for most content.

4.4.3 Digital Archives

- Contain **primary sources** (letters, manuscripts, papers) unlike libraries (secondary sources).
- Features:
  - Usually **unique** records.
  - Maintain **hierarchical organization** (archival bond = context of creation).
- Digitization changes:
  - Items may be described **individually** & easily reproduced.
  - Use **Encoded Archival Description (EAD XML)** for standardized access.
- Models: **NESTOR model** (Nested Sets for Object Hierarchies) → extension of **5S framework** for archives.
- Example: **Oxford Text Archive** (oldest digital academic archive).

4.4.4 CAD Libraries

- Cloud repositories of 3D models/parts for CAD, CAM, CAE, BIM.
- Examples: GrabCAD, SketchUp 3D Warehouse, Sketchfab, McMaster-Carr, TurboSquid, Chaos Cosmos, Thingiverse.
- Content may be free/open source or proprietary (subscription).
- Assets include: 3D models, textures, bump maps, HDRIs, plants/trees, lighting sources.
- Emerging: Generative AI CAD libraries (linked open data of schematics).

4.4.5 2D Graphics Repositories

- Store vector graphics & raster images/icons.
- Can be free-to-use or proprietary.
- Used for digital art, design, media creation.
- Examples: digital art repositories (icons, illustrations, stock graphics).

4.5 Features of Digital Libraries

General Advantages:

- Easy, rapid access to **books, archives, images** → recognized by public & commercial sectors.
- **Lower cost** vs. traditional libraries (no rent, fewer staff, less maintenance).
- **Tech innovations** (e-books, audiobooks, wikis, blogs).
- **Broader accessibility** → usable beyond geography & institutional limits.

Key Features:

- **No physical boundary** – access worldwide via internet.
- **24/7 availability** – round-the-clock access.
- **Multiple access** – same resource can be used simultaneously (controlled via DRM for copyrighted works).
- **Advanced information retrieval** – search by keywords, title, subject, author, etc.
- **Preservation & conservation** – provides **access copies** for fragile works; but long-term preservation still a challenge.
- **Space efficiency** – stores huge collections with minimal physical space.
- **Added value** – digitization improves readability, enhances images, removes stains/discoloration.

4.6 Software in Digital Libraries

- Institutional Repository Software → for ingest, preservation, access of academic works.

    - Examples: DSpace, Greenstone, Fedora Commons, proprietary (e.g., Library of Congress → Digiboard, CTS).
- Semantic Digital Libraries → designed for machine-use & social interaction.
    - Example: DjDL (semantic DL).
    - Two search types: keywords-based search & semantic search.
    - Semantic search uses:
        - Subject ontology
        - Bibliographic ontology
        - Community-aware ontology
- Applications: educational games, content sharing, social networking integration.

4.7 Metadata in Digital Libraries

- **Crucial for discovery** → quality of metadata = quality of access.
- **Challenges in cataloging:**
    - Complex/born-digital works need **advanced classification tools**.
    - Full-text search is useful, but **not sufficient** for:
        1. Finding translations of works.
        2. Differentiating between editions/volumes.
        3. Handling inconsistent/missing subject descriptors.
        4. Linking pseudonyms to real authors (e.g., Mark Twain = Samuel Clemens).
        5. Differentiating satire/parody from real content (e.g., *The Onion* vs *NY Times*).
- **Solution**: Semantic classification & improved metadata standards.

4.8 Searching in Digital Libraries

General Points

- Digital libraries provide **search interfaces** to locate resources.
- Many resources are part of the **Deep Web/Invisible Web** → not accessible via normal search engines.
- To increase visibility: libraries may create **special sitemaps/pages**.
- Common standard: **OAI-PMH (Open Archives Initiative Protocol for Metadata Harvesting)** → enables metadata sharing between digital libraries & search engines (e.g., **Google Scholar, Yahoo!, Scirus**).

User Behavior:

- As with physical libraries → relatively little is known about **how users select books**.

Two Main Strategies for Federated Searching:

1. **Distributed Searching**
    - Search request sent simultaneously to multiple servers.
    - Results collected → duplicates removed → sorted for user.
    - Uses protocols like **Z39.50**.
    - **Advantages:** indexing & storage load remains with each server.
    - **Disadvantages:** limited by differing indexing/ranking systems → results may be inconsistent.
2. **Harvested Metadata Searching**
    - A local index is built from metadata harvested from multiple libraries.
    - **Advantages:** control over indexing & ranking → more consistent results.
    - **Disadvantages:** harvesting/indexing is resource-intensive & costly.
    - Commonly uses **OAI-PMH** for metadata harvesting.

4.9 Digital Preservation

Definition:

- Ensures **digital media & information systems remain usable in the future**.

Techniques:

- **Emulation:** lower-level systems (e.g., floppy disks) are emulated.
- **Preservation:** bit-streams (actual files) are preserved.
- **Virtualization:** OS/software environments emulated as virtual machines.
- **Migration:** only possible when format/content is well-understood (e.g., office docs).

Example:

- **WiderNet Project – eGranary Digital Library**
  - Offline library on **6 TB hard drive**.
  - Includes **proxy server + search engine** for browser access.
  - Not designed for long-term preservation → only for **slow/unavailable/expensive Internet regions**.

Book Digitization:

- **High-speed, low-cost scanning** techniques now allow digitization of **millions of books per year**.
- Example: **Google Books Project** → digitizing & partnering with libraries.

4.10 Copyright and Licensing in Digital Libraries

Challenges:

- Digital copyright laws are still evolving → causes uncertainty.
- Republishing material online often requires **permission from rights holders**.
- Libraries vs. Publishers conflict → publishers want to control/commercialize online versions.

Copyright Status of Books (2010 estimates):

- 23% → published before 1923 → **public domain**.
- 5% → published after 1923 and still in print.
- 72% → out-of-print but still under copyright → **not available to public**.

Dilution of Responsibility:

- Digital material often **not owned by libraries** → intellectual property complexities.
- Many collections rely on **public domain/self-generated content**.
- Example: **Project Gutenberg** → digitizes out-of-copyright works for free public access.

Fair Use (US Copyright Act, 1976 – 17 USC §107):

Four factors:

1. **Purpose** of use
2. **Nature** of the work
3. **Amount** used
4. **Market impact**

Licensing & DRM:

- Some digital libraries acquire licenses → restrict lending (often **1 copy per license**) with **Digital Rights Management (DRM)**.

Digital Millennium Copyright Act (DMCA, 1998):

- Criminalizes attempts to **circumvent copyright protection**.
- Exemption for nonprofit libraries/archives:
  - May make **up to 3 copies** (1 digital).
  - Copies cannot be distributed publicly.
  - Allows copying if **format becomes obsolete**.

Ongoing Issues:

- Some propose copyright exemptions for digital libraries → benefits public but may discourage authors.
- Publishers may restrict e-books:
    - Example: **HarperCollins** → each e-book licensed for **26 loans only**, after which library must **repurchase access**.

4.11 Recommendation Systems in Digital Libraries

Purpose:

- Help users cope with **information overload** → suggest relevant content.

Examples:

- **IEEE Xplore**, **Europeana**, **GESIS Sowiport**.

Techniques:

- Content-based filtering.
- Collaborative filtering.
- Citation-based recommendations.

Research:

- Beel et al. (200+ articles) → over **90 approaches** to digital library recommendation.
- Many built on frameworks like **Apache Lucene** or **Apache Mahout**.

4.12 Drawbacks of Digital Libraries

- **User authentication** challenges.
- **Copyright** conflicts.
- **Digital preservation** difficulties.
- **Equity of access** → digital divide issues.
- **Interface design** may not be user-friendly.
- **Interoperability** issues between systems/software.
- **Information organization** problems.
- Poor/inefficient **taxonomy practices** (esp. historical material).
- Lack of **training & development**.
- **Metadata quality** often inconsistent.
- **High cost** of storage, servers, redundancy systems.

4.13 Future Development of Digital Libraries

Large-Scale Projects:

- **Google Books Project**, **Million Book Project**, **Internet Archive**.
- Legal breakthrough: In **2016, Google Books won court case** vs. Authors' Guild → allowed scanning continuation.

Technological Improvements:

- **OCR (Optical Character Recognition)** improving → better handling & presentation.
- Development of **alternative repositories & business models**.

Expert Views:

- Larry Lannom (CNRI): *"All problems of digital libraries are tied to archiving. If in 100 years people can still read your article, the problem is solved."*
- Daniel Akst: *"The future of libraries—and of information—is digital."*
- Berkeley researchers (Lyman & Variant): predicted global production of print/film/magnetic media ≈ **1.5 billion GB/year** → possible for average person to access nearly all information.

Recent Evolutions:

- Digital archives created in response to events (e.g., **COVID-19 pandemic**).

    - Example: **COVID CORPUS (2020)** → specialized international database for pandemic-related research.
- **Cornell University's Internet-First University Press** → general audience content, digitally organized.

4.14 Introduction to E Resources

- The advent of the Internet has dramatically changed how people and institutions function.
- Libraries have also undergone major transformation in the way they function and serve users.
- Libraries now actively **procure, organize, display, and issue** electronic forms of books, journals, newspapers, theses, and dissertations.
- This change is also due to a shift in **information-seeking behavior** → new generation of users prefer online resources and demand instant access.
- E-resources have unique features that provide convenience and flexibility.
- This section discusses the **concept, importance, types, advantages, and disadvantages** of e-resources.

4.15 E-Resources

- Definition: Any material that requires **computer mediation** to access and use its content.
- Includes both **online** and **offline** formats (e.g., CD-ROMs).
- Covers all products libraries provide via a **computer network**.
- Also called **online information resources**, which include:
    - Bibliographic databases.
    - Electronic reference books.
    - Search engines for full-text books.
    - Digital collections of data.
- Types:
    - **Born-digital** (e.g., e-journals, databases).
    - **Digitized print** (scanned resources).
- Difference from print: libraries usually **don't own** e-resources → ownership lies with providers.
- Access may be **free (open access)** or **subscription based**.
- Examples: e-magazines, e-encyclopedias, e-newspapers, e-journals, and articles.
- Devices: accessible on computers, tablets, smartphones, etc.

4.15.1 Advantages of E-Resources

1. Accessible via Internet → no need to physically visit library (beneficial for remote users).
2. Multiple users can access the **same resource simultaneously**.
3. Available **anywhere, anytime** as per user's convenience.
4. Single search interface allows searching across **multiple resources at once**.
5. Provide **usage statistics** to help librarians assess use.
6. Articles/journals often appear **online before print**.
7. **Hypertext links** guide users to related content.
8. Support **multimedia** (audio, video, animation) not available in print.
9. Subscriptions help save **physical storage space**.

4.15.2 Disadvantages of E-Resources

1. Require **Internet access** (digital divide issues).
2. Subscription dependency:
    - If cancelled → access to **back issues** may be lost (unlike print where past volumes remain in the library).
    - Applies to both e-journals and e-books.

3. Reading on screens can be **tedious and harmful** (eye strain, fatigue).

4.16 Managing E-Resources

Management of e-resources involves several steps:

4.16.1 Selection

- Methods of selection:
    1. **Serendipity** – finding useful resources by chance while surfing the Internet.
    2. **Faculty recommendations.**
    3. Reviewing e-journals from **other libraries.**
    4. **Publisher advertisements.**

4.16.2 Acquisition

- Unlike print (ownership), electronic resources give only **license for access rights.**
- Key activities:
    1. Determine price.
    2. Negotiate with vendor.
    3. Complete licensing agreement.
    4. Allocate funds.
    5. Place order.
    6. Verify accessibility of title.
    7. Communicate with vendor if not accessible.
    8. Process invoice for payment.

4.16.3 Staffing

- Library must decide whether acquisition/processing is done by **regular staff** or those with **special expertise**.
- Required skills: negotiating licenses, familiarity with electronic formats.

4.16.4 Licensing

- A **license** = written contract between library and publisher.
- Covers: method of payment, definition of users, restrictions, archival rights.
- Agreements are often **vendor-friendly**, so careful negotiation is needed.

4.16.5 Budgeting

- Libraries usually maintain a **separate budget** for e-resources.

4.16.6 Cataloguing

- E-resources catalogued into **OPAC**.
- Some libraries instead list them on their **websites with direct links.**

4.16.7 Maintenance

- Staff ensures e-resources are accessible via **IP ranges** or **Username/Password.**
- Responsible for distributing login details to authorized users.
- If problems persist → **communicate with publisher** for resolution.

4.16.8 Staff Training and User Education

- Staff trained in **accessing, browsing, retrieving** information.
- Libraries conduct **user education programmes** to promote effective use.

4.17 Categories of E-Resources

Types of e-resources:

- E-journals
- E-books
- Electronic databases
- E-reports
- E-theses & dissertations

- Institutional repositories

4.18 E-Journals

- Periodical publication in **electronic format** (mainly Internet-based).
- Periodicity: weekly, monthly, quarterly, annually.
- Types:
    1. Electronic version of a **print journal** (e.g., *Cell*, *New Scientist*).
    2. **E-only journals** (e.g., *Ariadne*, *D-Lib Magazine*).
    3. Print journals converted into **e-only format.**
    4. Access: free or fee-based (subscription, license, pay-per-use).

4.18.1 Advantages

- Accessible **anywhere, anytime.**
- Searchable by **keywords.**
- Additional digital-only content.
- No storage/binding issues.
- **Back issues** easily accessible.

4.18.2 Disadvantages

- Same as general disadvantages of e-resources (need Internet, subscription dependency, screen fatigue).

4.18.3 Library Consortia

- Libraries collaborate to share subscriptions & save costs.
- Examples:
    - **DeLCON** – Electronic Library Consortium (delcon.gov.in).
    - **UGC-Infonet Digital Library Consortium** (inflibnet.ac.in/econ).

4.19 E-Books

- Digital equivalent of printed books.
- Text + image-based, readable on computers/digital devices.
- Available in **various formats.**
- Access: full download (offline) or online-only.

4.19.1 Advantages

- Accessible **anywhere, anytime.**
- Notes, save & print pages possible.
- Keyword searchable.
- May include **audio & video.**
- Saves library **space & storage.**
- Eliminates issues of **damage, loss, theft.**
- Old titles stay available (never out of print).
- Low **production, shipping, handling costs.**

4.19.2 Disadvantages

- Need more **licenses** to serve multiple users.
- Dependent on **electricity/power.**
- DRM (Digital Rights Management) restricts sharing.

4.20 Accessing or Using E-Books

- **Suppliers & Models**: Supplied by various publishers/vendors with different business models, terms & conditions.
- **Simultaneous Users**: Number of users allowed depends on publisher (first-come, first-served).

- **Copyright & DRM**:
    - Users can usually print/copy **1 chapter or 5%** (whichever is greater).
    - Some publishers restrict or disallow printing/copying.
    - Many e-books allow **limited-time downloads** (auto-expiry).

4.20.1 Requirements to Access E-Books

- **Internet connectivity**.
- Updated **browser** (Chrome, Firefox, Edge).
- **Adobe Acrobat Reader** (PDF format common).
- Devices: **Kindle, Android, iPad, iPhone, Kobo, Nook, Sony Reader, PC.**
- Libraries pay for access via **third-party hosting sites**; download expires like a loan period.

4.20.2 Examples of E-Book Suppliers

1. **MyiLibrary**
2. **E-Library (ProQuest)**
3. **EBSCO**
4. **Springer Link**
5. **Oxford Scholarship Online**
6. **Safari Books Online (O'Reilly)**

4.20.3 Examples of Free E-Book Sources

1. **Project Gutenberg** – 60,000+ free classics.
2. **Internet Classics Archive (MIT)** – Classical texts.
3. **Internet Public Library (IPL)** – Wide subject access.
4. **UC Press E-Books Collection** – Academic titles.
5. **Online Books Page (UPenn)** – Free online book directory.
6. **CARRIE: Full Text Electronic Library** – Historical texts.

4.20.4 Usage Trends

- E-books **complement** print books, not replace them.
- Adoption faster among **researchers & faculty**.
- Preferred for **specific information retrieval**, not cover-to-cover reading.
- Increasingly important for **research purposes** in the next 5 years.

4.21 Electronic Databases

4.21.1 Bibliographic Databases

- **Definition**: Organized digital collection of bibliographic records (citations, abstracts, references to published literature).
- **Nature**: Can be general or subject-specific.
- **Contents**: Citations include **title, author, publication date, source**; most provide **abstracts** (summaries).
- **Usefulness**:
    - Helps researchers quickly judge relevance.
    - Abstracts sometimes act as substitutes for full articles.
    - Saves time in literature review and research.

Examples of Bibliographic Databases:

1. **J-Gate** – Indexes 29,513+ e-journals from 9,483 publishers.
2. **Abstracts on Hygiene and Communicable Disease (AHCD)** – Health & disease-related research.
3. **Current Contents Connect (Clarivate)** – Latest updates across disciplines.
4. **PubMed** – Biomedical & life sciences citations.
5. **ERIC (Education Resources Information Center)** – Education & pedagogy.
6. **INSPEC** – Physics, electronics, computer science.

4.21.2 Full-Text Databases

- **Definition**: Provide **complete text** of journal articles, book chapters, conference papers, etc.
- **Formats**: HTML or PDF.
- **Advantages**:
    - Saves time in accessing the actual article.
    - Meets user demand for direct access.
    - Ensures access to **latest research**.
    - Includes **back issues** of journals.

Examples of Full-Text Databases:

1. **ScienceDirect (Elsevier)** – 3,800 journals, 35,000+ e-books.
2. **JSTOR** – Humanities, social sciences, economics, history.
3. **ProQuest** – Multidisciplinary full-text collection.
4. **Wiley Online Library** – 4M+ articles, 1,500 journals, 11,500 e-books.
5. **Project MUSE** – Humanities & social sciences.
6. **EBSCO Academic Search Complete** – Large multidisciplinary collection.

4.23 Examples of Major Databases

4.23.1 Multidisciplinary Databases

- **Academic Search (EBSCO)** – Versions: Complete, Elite, Premier, Alumni; subscription-based.
- **African Journals OnLine (AJOL)** – African scholarly journals; free abstracts, paid full text.
- **Airiti Inc** – Asian scholarly content; subscription.
- **BASE (Bielefeld Academic Search Engine)** – Indexes academic resources globally; free.
- **CiNii (Japan)** – 15M+ Japanese articles; free abstracts, paid full text.

4.23.2 Science & Technology Databases

- **Aerospace & High Technology (ProQuest)** – Aerospace, aeronautics, astronautics; subscription.
- **ArXiv (Cornell)** – Physics, maths, CS, biology, statistics; free preprints.
- **ASCE Library** – Civil engineering journals & proceedings; free abstracts, paid full text.
- **ACM Digital Library** – Computer science & engineering; subscription.
- **Astrophysics Data System (Harvard)** – Astrophysics & physics; free.

4.23.3 Agriculture & Life Sciences Databases

- **AGRICOLA (NAL/ProQuest/OVID)** – Agriculture; free & paid versions.
- **AGRIS (FAO-UN)** – Agriculture, forestry, fisheries, nutrition; free.
- **CAB Abstracts (CABI)** – Applied life sciences; subscription.
- **Biological Abstracts (Thomson Reuters)** – Life sciences & biomedical research; subscription.
- **BioOne** – Biodiversity, ecology, environment; mixed free & paid.

4.23.4 Chemistry Databases

- **Analytical Abstracts (RSC)** – Chemistry indexing; subscription.
- **Analytical Sciences Digital Library (NSDL/ACS)** – Free educational chemistry resources.
- **Beilstein (Elsevier / Reaxys)** – Organic chemistry database; subscription.
- **Chemical Abstracts Service (ACS)** – Comprehensive chemistry references; subscription.
- **Chemisches Zentralblatt (InfoChem)** – Historical chemistry data; subscription.
- **ChemXSeer (Penn State)** – Abandoned project; free.

4.23.5 Social Sciences & Humanities Databases

- **AgeLine (EBSCO)** – Aging, public health, sociology, gerontology; subscription.
- **Anthropological Index Online (RAI)** – Anthropology index only; free.
- **Anthropological Literature (Harvard/OCLC)** – Anthropology references; subscription.
- **Arts & Humanities Citation Index (Clarivate)** – Part of Web of Science; subscription.

- **Bibliographie de civilisation médiévale (Poitiers/Brepols)** – Medieval studies bibliography; subscription.
- **Chinese Social Sciences Citation Index (Nanjing University)** – Social sciences; subscription.
- **ATLA Religion Database** – Theology & religion; subscription.

4.23.6 Medicine, Health & Allied Sciences Databases

- **CINAHL (EBSCO)** – Nursing & allied health; subscription.
- **CHBD (Univ. of Calgary)** – Circumpolar health; free.
- **PubMed/Medline** (already noted earlier) – Biomedicine; free.
- **AgeLine (EBSCO)** – Gerontology, aging studies; subscription.

4.23.7 Specialized Databases & Tools

- **Arnetminer (Tsinghua Univ.)** – Academic social network mining; free.
- **Arachne (German Arch. Institute/Cologne Univ.)** – Archaeology & art history; free.
- **AULIMP (Air Univ.)** – Military periodicals index; free.
- **Book Review Index Online (Thomson Gale)** – Book reviews; subscription.
- **Books in Print (R.R. Bowker)** – Global book listings; subscription.
- **Citebase (Southampton Univ.)** – Citation index for free research; free.
- **CiteSeer / CiteSeerX (Penn State)** – Computer science, maths, stats; free.

4.23.8 Multidisciplinary Databases

- **Scopus (Elsevier)** – World's largest abstract & citation database; 20,500+ titles, 5,000+ publishers. Subscription.
- **ScienceDirect (Elsevier)** – Full-text scientific and medical literature. Subscription.
- **SpringerLink (Springer)** – Journals & eBooks across all subjects. Free abstracts/previews; subscription full text.
- **Web of Science (Clarivate)** – Citation database, includes SSCI, SCI, Biological Abstracts, Zoological Record. Subscription.
- **WorldWideScience (DOE/Alliance)** – Global science gateway with multilingual searching/translation. Free.
- **WorldCat (OCLC)** – Unified catalog of library collections worldwide. Free + subscription.
- **Semantic Scholar (Allen Institute)** – AI-powered search in CS & biomedicine. Free.
- **SemOpenAlex (OpenAlex Project)** – Knowledge graph extension of OpenAlex for research trends & collaboration. Free.
- **The Lens (Cambia)** – Aggregates bibliometric & patent data from CrossRef, PubMed, OpenAlex. Free.
- **Sparrho** – Personalized platform for 60M+ articles & patents. Free.
- **Shibata (Yubetsu)** – Multilingual scientific database covering sciences & humanities. Free.
- **SearchTeam (Zakta)** – Collaborative search platform for scholarly resources. Free.
- **Socolar** – Open access scholarly resources (various languages). Free abstracts, links to full-text.

4.23.9 Social Sciences, Law & Education Databases

- **Social Science Citation Index (Clarivate)** – Part of Web of Science; social science citation tracking. Subscription.
- **SSRN (Social Science Research Network)** – Abstracts + full-text papers across disciplines. Free.
- **VET-Bib (EU)** – Vocational education & training literature. Free.
- **WestLaw (Thomson Reuters)** – Comprehensive law/legal database. Subscription.

4.23.10 Physics & Mathematics Databases

- **INSPIRE-HEP (CERN, DESY, Fermilab, SLAC, IHEP)** – High-energy physics literature. Free.
- **Zentralblatt MATH (Springer)** – Comprehensive mathematics database. Subscription (first 3 records free).
- **Zasshi Kiji Sakuin (NDL, Japan)** – Japanese periodicals index (journals). Free.

4.23.11 Medicine, Health & Toxicology Databases

- **TOXLINE (NLM, USA)** – Bibliographic database for toxicology. Free.

4.23.12 Chemistry & Specialized Science Databases

- **SPRESI Database (InfoChem)** – Chemical structures & reactions (SPRESIweb, SPRESImobile). Subscription.

4.23.13 Zoology & Biological Sciences Databases

- **The Zoological Record (Clarivate)** – Register of zoological names & research (1864–present). Subscription.

4.24 Barcode Technology in Libraries

A barcode is a method of representing data in a visual, machine-readable form. Initially, barcodes represented data by varying the widths, spacings and sizes of parallel lines. These one-dimensional (1D) barcodes can be scanned by special optical scanners called barcode readers. Later, two-dimensional (2D) variants such as QR codes were developed, using rectangles, dots, and other matrix patterns. Both 1D and 2D codes can be read using optical scanners or mobile devices with cameras.

4.24.1 History of Barcodes

The barcode was invented by Norman Joseph Woodland and Bernard Silver in 1952, inspired by Morse code. The first major success came in the 1970s with supermarket checkout systems (e.g., Marsh supermarket in Ohio, 1974, scanning Wrigley's chewing gum with UPC codes). Over time, barcodes expanded into logistics, railways, and inventory management.

Barcode Systems in Libraries

Libraries adopted barcodes in the 1980s and 1990s to automate circulation, cataloging, and inventory. A typical library barcode system consists of:

- **Barcode labels** attached to books, journals, CDs, and DVDs.
- **Library ID cards** issued to patrons with unique barcode identifiers.
- **Barcode scanners** at circulation desks for check-in/check-out.
- **Integrated Library System (ILS)** software that connects scanned data to library databases for automated record updates.

Examples in Libraries

- A library user checks out a book: the librarian scans the **user's ID barcode** and the **book's barcode**. The ILS automatically records the transaction, due date, and updates the catalog.
- During **stock verification**, staff use handheld barcode scanners to scan shelves quickly, comparing with catalog data to identify missing or misplaced books.
- In **self-checkout stations**, patrons scan their own ID and book barcodes without staff assistance.
- QR codes are now used on library posters or OPAC records to quickly link users to digital catalogs, e-books, or subject guides via smartphones.

Advantages for Libraries

- Faster check-in/check-out processes.
- Reduced manual errors in circulation.
- Easier inventory control and reporting.
- Integration with interlibrary loan systems.
- Cost-effective compared to RFID, while still highly reliable.

Transition to RFID

Though barcodes remain widely used in libraries, many modern libraries are gradually adopting **RFID (Radio Frequency Identification)** for faster scanning, anti-theft, and bulk processing. However, barcodes are still the most affordable and universal solution for small and medium-sized libraries.

4.25 Barcode Readers Symbologies

The mapping between messages and barcodes is called a symbology. A symbology defines how messages are encoded into bars and spaces, including start/stop markers, quiet zones, and checksum rules.

- **Linear symbologies**: Classified by properties such as continuous vs. discrete, and two-width vs. many-width.
- **Interleaving**: Characters are encoded in pairs, e.g., Interleaved 2 of 5.
- **Stacked symbologies**: Repeat a given linear symbology vertically.
- **2D symbologies**: Matrix codes, circular, or other patterns (e.g., DataGlyphs), requiring CCD or image-based scanners.
- **Optimization**: Linear and stacked symbologies are designed for laser scanning, while 2D symbologies need image-based scanners.
- **Technological shift**: In the 1990s, CCD imagers emerged; by 2007, linear imaging began replacing laser scanning for durability and performance.

4.26 Barcode Readers

Barcode readers are devices designed to decode barcodes and transfer data to computers or applications.

- **Types**:
  - RS-232 scanners: Require special programming for data transfer.
  - Keyboard interface scanners: Send data as if typed via keyboard wedge.
  - USB scanners: Emulate HID keyboards; widely used.
- **Smartphone scanning**: Modern phones (Android, iOS, Windows, BlackBerry, Symbian) can scan QR codes and some barcodes via built-in or third-party apps.
- **Performance**: Dedicated scanners remain faster and more accurate compared to smartphones.

4.27 Barcode Readers Quality Control and Verification

Barcode quality must meet industry standards to ensure readability across the supply chain. Poor quality barcodes can lead to penalties for non-compliance.

- **Verification tests for linear barcodes**: Edge contrast, minimum reflectance (bars/spaces), symbol contrast, modulation, inter-character gap, decode, and decodability.
- **Verification tests for 2D matrix barcodes**: Symbol contrast, modulation, decode, unused error correction, pattern damage, grid non-uniformity, and axial non-uniformity.
- **Grading**: Parameters graded A–F or numerically (0.0–4.0). Minimum acceptable grade: 2.5 (C).
- **Process control**: Verification ensures repeatable, consistent measurement, allowing adjustments in printing for higher quality.
- **Validation**: Barcodes may be tested against environmental factors (e.g., sunlight, abrasion, moisture).

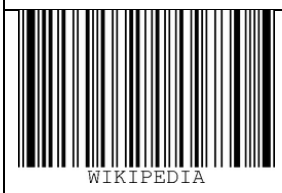
4.28 Barcode Verifier Standards

Barcode verifier standards are established to maintain consistency and quality across industries.

- **ISO/IEC 15426-1**: Linear barcode verifier standards.
- **ISO/IEC 15426-2**: 2D barcode verifier standards.
- **ISO/IEC 15416**: Current international barcode quality specification for linear barcodes.
- **ISO/IEC 15415**: Current international barcode quality specification for 2D barcodes.
- **ANSI X3.182**: Original U.S. specification for UPCs.
- **ISO/IEC TR 29158**: Standard under development for Direct Part Marking (DPM) quality.

Linear barcodes

A first generation, "one dimensional" barcode that is made up of lines and spaces of various widths or sizes that create specific patterns.

Example	Symbology	Continuous or discrete	Bar type	Uses
	Codabar	Discrete	Two	Old format used in libraries and blood banks and on airbills (out of date, but still widely used in libraries)
	Code 25 – Interleaved 2 of 5	Continuous	Two	Wholesale, libraries International standard ISO/IEC 16390
	Code 11	Discrete	Two	Telephones (out of date)
	Farmacode or Code 32	Discrete	Two	Italian pharmacode – use Code 39 (no international standard available)
	Code 39	Discrete	Two	Various – international standard ISO/IEC 16388
	Code 93	Continuous	Many	Various
	Code 128	Continuous	Many	Various – International Standard ISO/IEC 15417
	CPC Binary	Discrete	Two	
	Data Logic 2 of 5	Discrete	Two	Datalogic 2 of 5 can encode digits 0–9 and was used mostly in Chinese Postal Services.
	EAN 2	Continuous	Many	Addon code (magazines), GS1-approved – not an own symbology – to be used only with an EAN/UPC according to ISO/IEC 15420
	EAN 5	Continuous	Many	Addon code (books), GS1-approved – not an own symbology – to be used only with an EAN/UPC according to ISO/IEC 15420

	EAN-8, EAN-13	Continuous	Many	Worldwide retail, GS1-approved – International Standard ISO/IEC 15420
	Facing Identification Mark	Discrete	Two	USPS business reply mail
	GS1-128 (formerly named UCC/EAN-128), incorrectly referenced as EAN 128 and UCC 128	Continuous	Many	Various, GS1-approved – just an application of the Code 128 (ISO/IEC 15417) using the ANS MH10.8.2 AI Datastructures. It is not a separate symbology.
	GS1 DataBar, formerly Reduced Space Symbology (RSS)	Continuous	Many	Various, GS1-approved
	IATA 2 of 5	Discrete	Two	IATA 2 of 5 version of Industrial 2 of 5 is used by International Air Transport Association had fixed 17 digits length with 16 valuable package identification digit and 17-th check digit.
	Industrial 2 of 5	Discrete	Two	Industrial 2 of 5 can encode only digits 0–9 and at this time has only historical value.
	ITF-14	Continuous	Two	Non-retail packaging levels, GS1-approved – is just an Interleaved 2/5 Code (ISO/IEC 16390) with a few additional specifications, according to the GS1 General Specifications
	ITF-6	Continuous	Two	Interleaved 2 of 5 barcode to encode an addon to ITF-14 and ITF-16 barcodes. The code is used to encode additional data such as items quantity or container weight
	JAN	Continuous	Many	Used in Japan, similar to and compatible with EAN-13 (ISO/IEC 15420)

	Matrix 2 of 5	Discrete	Two	Matrix 2 of 5 can encode digits 0–9 and was uses for warehouse sorting, photo finishing, and airline ticket marking.
	MSI	Continuous	Two	Used for warehouse shelves and inventory
	Pharmacode	Discrete	Two	Pharmaceutical packaging (no international standard available)
	Plessey	Continuous	Two	Catalogs, store shelves, inventory (no international standard available)
	Telepen	Continuous	Two	Libraries (UK)
	Universal Product Code (UPC-A and UPC-E)	Continuous	Many	Worldwide retail, GS1-approved – International Standard ISO/IEC 15420

4.27 History of RFID

- 1945: Leon Theremin invented "The Thing", a passive listening device (predecessor of RFID).
- WWII: Identification Friend or Foe (IFF) transponders used to identify aircraft.
- 1948: Harry Stockman published first major RFID paper; predicted future applications.
- 1971–73: Mario Cardullo demonstrated passive RFID transponder with memory; patented 1973.
- 1973: Steven Depp, Alfred Koelle, Robert Freyman (Los Alamos) demo modulated backscatter RFID (UHF, microwave).
- 1983: Charles Walton received first RFID patent.
- 1996: Batteryless passive RFID tag patent granted (David Everett, John Frech, Theodore Wright, Kelly Rodriguez).

4.28 RFID Design

- RFID system = Tags + Readers (interrogators).
- Reader sends signal → Tag responds with stored info.

4.29 RFID Tags

- Components: microchip, antenna, substrate.
- Info stored in non-volatile memory.
- Types: Passive, Active, Battery-assisted Passive.
- Passive: smaller, cheaper, powered by reader’s energy.
- Active: battery, periodic transmission.
- Battery-assisted: small battery, activated by reader.

- Tags can be:
  - Read-only (factory serial no.).
  - Read/write (user can add info).
  - Write-once, read-multiple (programmable once).
- Responses: unique ID or product info (batch no., date, etc.).
- Multiple tags can be read simultaneously.

4.30 RFID Readers

- Types:
  1. PRAT (Passive Reader Active Tag): reader only receives; range 1–2000 ft.
  2. ARPT (Active Reader Passive Tag): reader transmits, tag replies.
  3. ARAT (Active Reader Active Tag): both active; variation = BAP tag (small battery).
- Readers:
  - Fixed (defined interrogation zone).
  - Mobile (handheld, mounted on carts/vehicles).

RFID frequency bands

Band / Frequency	Regulations	Range	Data Speed	ISO/IEC 18000	Applications / Remarks	Approx. Tag Cost (2006)
LF: 120–150 kHz	Unregulated	10 cm	Low	Part 2	Animal ID, factory data collection	US$1
HF: 13.56 MHz	ISM worldwide	0.1–1 m	Low–Moderate	Part 3	Smart cards, memory/microprocessor cards (ISO 15693, 14443, Mifare, FeliCa, etc.)	US$0.05–5
UHF: 433 MHz	Short range devices	1–100 m	Moderate	Part 7	Defense, underground miner tracking (active tags)	US$5
UHF: 865–868 MHz (EU), 902–928 MHz (NA)	ISM band	1–12 m	Moderate–High	Part 6	Retail (EAN), railroads, logistics	US$0.04–1 (passive)
Microwave: 2.45–5.8 GHz	ISM band	1–2 m	High	Part 4	WLAN, Bluetooth	US$25 (active)
Microwave: 3.1–10 GHz	Ultra-wide band	Up to 200 m	High	–	Semi-active / active tags required	US$5 (projected)
mm-wave: 24.125 GHz	ISM worldwide	10–200 m	High	–	Semi-passive tags; retrodirective backscatter for long range	US$10 (projected)

4.31 Libraries

- RFID tags: square (books), round (CD/DVD), rectangular (VHS).
- Replaces/supplements barcodes → faster inventory & self-checkout.
- Acts as security (instead of electromagnetic strips).
- Over 30M library items worldwide have RFID (e.g., Vatican Library).
- Advantages:

    - No need to open book/DVD case to scan.
    - Multiple books read at once (even on conveyor belt).
    - Portable readers → shelf inventory in seconds.
    - Borrowers can self-checkout → less staff workload.
- Costs (2004 Dutch estimate): €50,000 for library lending 100k books/yr.
- Impact on staff: not reducing jobs in North America; automation balances reduced budgets.
- Privacy concerns:
    - Some tags readable up to 100m → tracking worries.
    - Library tags = no patron info, usually readable only within ~3m.
    - Solutions: codes linked only to library DB, re-coded on return, hidden tags.
    - Potential: track stolen books outside library if RFID becomes ubiquitous.

4.32 RFID Use in Museums

- RFID used in visitor applications.
- Example: *eXspot* (Exploratorium, San Francisco).
    - Visitors received RFID card.
    - Could get exhibit info, take photos, access personalized website later.
    - Data stored for later analysis.

4.33 RFID Use in Schools & Universities

- 2004: Osaka, Japan → RFID in kids' clothes, backpacks, IDs.
- 2007: Doncaster, England → school tested RFID in uniforms.
- St Charles Sixth Form College, London (2008): RFID card system for entry/attendance.
- Whitcliffe Mount School, England: RFID cards track pupils/staff in/out.
- Philippines (2012): RFID in student IDs →
    - Book borrowing, school gate entry, shop/canteen payments, attendance.

4.34 Need for Library Automation

- **Key Question**: Does the library require automation?
- **Justification**: High expenses → must ensure technology meets staff & user needs.
- **Jones' View**:
    - Microcomputers are necessary regardless of size/type/budget.
    - Enables resource sharing, informed decision-making, and better service.
    - Trend in society → libraries forced to adopt.

4.35 Growth of Documents in Need for Library Automation

- Explosion of information (science, technology, social sciences).
- Includes books + non-book materials.
- Traditional methods inadequate.
- Technology ensures systematic organization.

4.36 Greater Efficiency through Library Automation

- Computers → faster, systematic, reliable library workflow.
- Records = more accurate, reliable, accessible.
- All housekeeping & information tasks → done with speed & precision.

4.37 Co-operation & Resource Sharing with help of Library Automation

- No single library can collect all documents (even in one field).
- Increasing collaboration among Indian libraries.
- **Advantages**:
  a) Access to wider resources via coordination.
  b) Reduced costs → shared among libraries.

4.38 Lancaster's Reasons for Library Automation

- Coping with rising demands.
- Reduce or stabilize staff numbers.
- Delegate more work to clerical/paraprofessional staff.
- Improve current services.
- Provide **new services**.
- Collect better data for management decisions.

4.39 Areas of Library Automation

- Libraries have always adopted technology (typewriter → computers).
- Automation started in universities → spread to special libraries faster.
- Computers used in libraries for:
  a) Clerical, financial, and record-keeping functions.
  b) Library-specific activities (cataloguing, acquisitions, circulation, serials control).
  c) Patron-use services.

4.40 Office Automation

- First step in library automation → helps staff and management.
- Microcomputers used for word processing, databases, financial planning, bookkeeping.
- Four applications: Word Processing, Spreadsheets, Database Management, Telecommunications.

4.40.1 Word Processing

- Replaces repetitive typing → reduces clerical burden.
- Used for notices (overdue, missing serials, etc.).
- Forms stored, customized, revised, reprinted easily.
- Allows multiple copies without carbons.
- Easy transition for staff (similar to typing).

4.40.2 Spreadsheets

- Traditional ledgers replaced by electronic spreadsheets.
- Enables instant recalculations.
- Improves accuracy and error-checking.
- Essential for budgeting and financial records.

4.40.3 Database Management

- Maintains inventories, mailing lists, patron records, equipment logs.
- Eliminates bulky paper records.
- Allows quick modifications across records.
- Provides flexible access and reporting options.

4.40.4 Telecommunications

- Connects library with external/internal resources.
- Used for:
  a) Document transfer (to libraries, admin offices).
  b) Access to outside databases.
  c) Retrieval from in-house systems (mini/mainframes).
  d) Institutional email use.

4.41 Automation of House-keeping Functions

- Refers to automating administrative functions unique to libraries.
- Includes: circulation, acquisitions, cataloguing, and serials control.
- Similar to office automation (focus on repetitive tasks), but more specialized and library-specific.
- Aims to save staff time for intellectual/judgmental work.

4.41.1 Acquisitions

- Routine, repetitive, and paper-intensive process.
- Involves selection → procurement → transfer to cataloguing.
- Manual system → heavy record-keeping, difficulty in tracking orders, limited management info.
- Automated acquisitions:
  a) Reduces paperwork and labour.
  b) Maintains up-to-date records.
  c) Provides efficient control over ordering, claiming, cancellation.
  d) Ensures timely financial information.
  e) Generates management reports.

4.41.2 Serials Control

- Complex, labour-intensive, requires high accuracy.
- Automation applied to manage subscriptions, binding, renewals, cancellations.
- Objectives:
  a) Record and maintain accurate serials data.
  b) Control subscriptions, claiming, cancellations.
  c) Manage binding efficiently.
  d) Provide timely financial data.
  e) Generate management reports.
  f) Reduce manual labour and time.

4.41.3 Circulation Control

- Most visible and central library function.
- Like inventory control; requires real-time accuracy.
- Includes loans, returns, dues, fines, holds, booking, reserves, in-library use.
- Automated circulation:
  a) Records loan data accurately in real-time.
  b) Controls dues, fines, and borrower records.
  c) Tracks book and borrower status.
  d) Generates statistical/management reports.

4.41.4 Cataloguing

- Fundamental activity: descriptive cataloguing + production of catalogue.
- Manual cataloguing → slow, costly, backlog of items.
- Automated cataloguing:
  a) Speeds up processing of materials.
  b) Reduces clerical effort, stationery, and unit costs.
  c) Serves as common access tool across libraries.

4.42 e-Granthalaya

- Digital platform developed by NIC, Ministry of Electronics & IT, Govt. of India for Govt. Libraries.
- Provides: Library Management Software, Digital Library Module, Cloud hosting, OPAC portal, rollout services.
- Aims to transform traditional libraries into e-Libraries.
- Supports automation of housekeeping functions, digital library integration, and online member services with single-window access.
- Latest version: **e-Granthalaya 4.0** (Cloud Ready, Web-based, Enterprise mode, centralized DB).
- Hosted in NIC National Cloud (Meghraj). Uses PostgreSQL (Open Source DBMS).

4.42.1 History

- Started at **Karnataka State Centre of NIC, Bangalore** as an in-house project.
- Initially designed for Public Libraries of Karnataka.

- Later, NIC HQs LIS Division improved software with library professionals' input.
- Enhanced UI and simplified workflows for all types of libraries.

4.42.2 Technology / Platform Used

- VB 6 / ASP / HTML
- VB.NET / ASP.NET 2.0
- ASP.NET 4.0 with AJAX, JQuery, JSON, SilverLight

4.42.3 System Requirements

- Application hosted in NIC National Cloud → Online use only.
- No installation/maintenance at user end.
- Requirements:
  a) Desktops with high-speed internet (min 4 Mbps).
  b) Barcode printer/scanner, small laser printer.

4.42.4 Versions

- 1.0 (2003) → MS SQL Server 7
- 2.0 (2005) → MS SQL Server 2000
- 3.0 (2007) → MS SQL Server 2005
- 4.0 (2015) → PostgreSQL (Open-Source DBMS)

4.42.5 Software Components (4.0)

- Separate database for each library cluster.
- e-Granthalaya 4.0 application.
- Crystal Reports executables.

4.42.6 Editions Available

- Public Library Edition.
- Government Libraries Edition.
- Network Edition.
- Enterprise Edition.

4.42.7 Implementation & Distribution Policy

- Provided only to Govt. and Semi-Govt. organizations.
- Hosted in NIC Cloud → accessed online only.
- Requires high-speed internet (4–8 Mbps).

4.43 Koha

- Open-source Integrated Library System (ILS).
- Used globally by public, school, special, and large academic libraries.
- Name "Koha" = Māori term meaning gift/donation.
- Web-based ILS with SQL backend (MariaDB/MySQL).
- Cataloguing data stored in MARC; accessible via Z39.50/SRU.
- Highly configurable UI, multilingual.
- Provides standard ILS functions with Web 2.0 features.

4.43.1 Features

- Web 2.0 tools: tagging, comments, social sharing, RSS feeds.
- Union catalog facility.
- Customizable search.
- Online circulation.
- Barcode printing.
- Patron card creation.
- Report generation.
- Patron self-registration through OPAC.

4.43.2 History

- Developed in 1999 by Katipo Communications for Horowhenua Library Trust (New Zealand).
- First installation: January 2000.
- 2001: Paul Poulain (France) added multilingual support.
- 2002: Support for MARC and Z39.50 (sponsored by Athens County Public Libraries).
- 2005: LibLime (Metavore Inc., USA) added Zebra search support for scalability and faster searches.
- 2007: Vermont libraries tested Koha → formed **VOKAL consortium**; shared production environment by 2011.
- 2010: King's Fund (UK) migrated to Koha (supported by PTFS Europe).
- 2011: Spanish Ministry of Culture developed **KOBLI** (Koha-based project).
- 2014: Turkey's Ministry of Culture adopted Koha-Devinim in 1,136 public libraries (17M+ items, 2M+ active users).
- Widely adopted by specialized libraries (e.g., music libraries) due to easy customization.
- By 2017: Most widely implemented open-source ILS worldwide.
- By 2019: Very large active developer community, mature codebase.

4.43.3 Dispute with LibLime / PTFS

- 2009: Dispute over LibLime's reluctance to share patches and inclusivity.
- Community claimed LibLime forked Koha.
- Separate repositories and community established.
- 2010: LibLime purchased by PTFS, dispute continued.
- 2011: LibLime attempted provisional trademark of "Koha" in NZ.
- 2013: Koha community + Catalyst IT won appeal; trademark denied, LibLime paid costs.

Koha releases follow a regular, calendar based, pattern with monthly maintenance releases and bi-annual feature releases.

Version	Release Date	Supported Until	Status
25.05	2025-05-27	2026-11	**Latest (stable)**
24.11 LTS	2024-11-26	2028-05	Supported (LTS)
24.05	2024-05-28	2025-11	Supported
23.11	2023-11-30	2025-05	Supported
23.05	2023-05-31	2024-11	Supported
22.11 LTS	2022-11-25	2026-05	Supported (LTS)
22.05	2022-05-28	2023-11	**Unsupported**
21.11	2021-11-25	2023-05	**Unsupported**
21.05	2021-05-28	2022-11	**Unsupported**
20.11	2020-11-27	2022-05	**Unsupported**
20.05	2020-05-31	2021-11	**Unsupported**
19.11	2019-11-27	2022-11	**Unsupported**
19.05	2019-05-30	2020-11	**Unsupported**
18.11	2018-11-27	2020-05	**Unsupported**

4.44 Software for University Libraries (SOUL)

- State-of-the-art Integrated Library Management Software (ILMS).
- Developed by **INFLIBNET Centre** (UGC initiative).
- Designed for **college and university libraries**, but suitable for all types (academic, special, school).
- Works in **client–server environment**.

- Compliant with **international standards** for bibliographic formats, networking, and circulation protocols.
- Developed after consultation with senior library professionals.
- Automates all housekeeping operations of libraries.

4.44.1 Versions

- **SOUL 1.0** → Released at CALIBER 2000.
- **SOUL 2.0** → Released in January 2009.
    - Compliant with **MARC 21 bibliographic format**.
    - Unicode-based Universal Character Sets → supports multilingual bibliographic records.
    - Supports **NCIP 2.0** and **SIP 2** protocols → for electronic surveillance and control.
- **SOUL 3.0** → Released in February 2021.
    - Database designed for latest **MS-SQL** and **MySQL** (or other RDBMS).

Comparison of open-source ILS platforms

Software	Developer	Release	Written in	License
Koha	Koha Community	2000	Perl	GPL-3.0-or-later
PMB	PMB Development Team	2002	PHP	CECILL-2.0
NewGenLib	Verus Solutions	2005	Java	GPL
Evergreen	Georgia Public Library Service (GPLS)	2006	Perl, C, XUL	GPL-2.0-or-later
OpenBiblio	OpenBiblio Development Team	2002	PHP	GPL-2.0-or-later

Chapter 5: Concept and Types of Information

5.1 Information: Definitions and Concepts

- The word **information** is used in many contexts → no universal definition.
- Formal definitions exist, but none accepted globally.
- More useful to **review concepts** than attempt one rigid definition.
- Information Science = study of **structure, flow, and impact of information**.

5.1.1 Belkin's Concept of Information

Definition vs. Concept

- **Definition** → tries to fix meaning.
- **Concept** → interprets phenomenon.
- Belkin: focus on **concept** (flexible, operational), not rigid definition.

Three Approaches

1. **Methodological** → utility of the concept.
2. **Behavioural** → phenomena the concept must explain.
3. **Definitional** → context in which it applies.

Eight Requirements

1. Must involve **purposeful, meaningful communication**.
2. Should consider information as **social communication**.
3. Must account for **information being requested/desired**.
4. Must relate **information to knowledge of sender & recipient**.
5. Should consider **effects on recipient**.
6. Should note **different effects of messages in varied forms**.
7. Must **generalize beyond individual cases**.
8. Should allow **prediction of effects of information**.

- **Points 1–6** → Relevance to **user communities**.
- **Points 7–8** → Operational needs for **designing information systems**.

5.1.2 Wersig and Neveling's Approaches to Information

They define information **comprehensively** using **six approaches**:

1. **Structural Approach** → Information as **structures of the world** or **relations between physical objects** (may or may not be perceived).
2. **Knowledge Approach** → Information as **knowledge built from perception** of the world's structure. *(Not recommended since knowledge & information often treated as synonyms).*
3. **Message Approach** → Information as **symbols carried physically** (focus of mathematical communication theory).
4. **The Meaning Approach**: where the semantic content of a message is accepted as information;
5. **Effect Approach (Recipient-Oriented)** → Information exists **only when it has a specific effect** on the recipient.
6. **Process Approach** → Information as a **process in the human mind** when a **problem meets useful data**.

5.1.3 Brookes' Fundamental Equation of Information Science

- Brookes viewed **knowledge as a sum of many bits of information** organized coherently.
- Proposed the **Fundamental Equation of Information Science**:
  K[S] + ΔI = K[S + ΔS]
  - K[S] = existing knowledge structure

    - ΔI = new information
    - K[S + ΔS] = modified knowledge structure
- Meaning: knowledge structure changes when new information is added.
- The equation is **pseudo-mathematical**, used for conceptual clarity, not exact measurement.
- Defines **information as a small bit of knowledge**.
- Stresses that the **same information affects different knowledge structures differently**.
- Central problem of information science: **interpreting this equation** to explain the information process.

5.1.4 Bell's Approach

- Daniel Bell emphasized the **central role of theoretical knowledge** in shaping the **information society**.
- His theory: transition from **industrial → post-industrial society** (information society) is driven by **new intellectual knowledge**.
- Knowledge acts as the **key tool** for:
    - System analysis
    - Decision theory
    - Computerisation and formal rules
    - Algorithmic decision-making replacing intuitive judgment
- Defines concepts:
    - **Data** → raw facts, processed for tasks like payrolls, banking, scheduling.
    - **Information** → data processing in broad sense (storage, retrieval, communication).
    - **Knowledge** → organized facts/ideas with reasoning, transmitted systematically (research, teaching, textbooks, archives).
- Bell's view aligns with library and information services → **supporting data, information, and knowledge activities**.

5.1.5 Machlup's Approach

- **Fritz Machlup**, Austrian American economist, pioneer of **information economics**.
- Landmark work: *The Production and Distribution of Knowledge in the United States* (1962).
- Placed **information and knowledge as primary economic resources** for growth and development.

Distinction between Information and Knowledge

Information	Knowledge
Piecemeal, fragmented, particular	Structured, coherent, often of enduring significance
Timely, transitory, ephemeral flow	Stock, largely resulting from inputs of information
Flow of messages	May affect stock of knowledge by adding, restructuring, or changing it

Contributions and Insights

- Studied **sectors handling information**:
    - Primary and secondary information
    - Computer-based providers
    - Information retailers
    - Seminar & conference services
    - Information support services
- **Key Idea**: Information = **economic resource** (like finance, transport, power).
- Along with Bell:
    - **Machlup** → economic dimension of information.

- **Bell** → social transformation through information & knowledge.

Information Science(s): The Power of Plural 'S'

- Work: *Study of Information: Interdisciplinary Messages*.
- Showed **multiple disciplines** converge around information.
- Each discipline interprets "information" differently → **no single paradigm**.
- Information sciences, like natural & social sciences, **do not need unified framework**.

Final Statement

- Warned against **misuse of the word 'information'**:
  - Information ≠ mere **observation or data consultation**.
  - In communication theory, "information" often used wrongly for **signal transmission**.
  - Correct terms: **signal transmission, actuation, activating impulses**.
- Misuse has led to **confusion** in information studies.

5.2 INFORMATION: TYPES

- Information has **no universal classification** → depends on context & purpose.
- Based on **modified Shannon–Weaver model** + *information needs*:
  Source → Channel → Media → Information Needs → Recipients

Key Elements of the Model

- **Source** → Mode of communication (signs, symbols, texts, graphics).
- **Channel** → Established carriers that disseminate information or its surrogates.
- **Media** → Physical carriers of messages/content.
- **Information Needs** → Types of information sought by users.
- **Recipient** → Ultimate receiver (may also generate new information).

5.2.1 By Source

Information can be grouped as:

1. **Signals/Messages** → Signs, symbols, words, numbers (e.g. mathematical formulae, statistical data).
2. **Textual Matter** → Larger amount of messages or structured information.
3. **Graphics** → Photographs, pictures, graphs, diagrams, illustrations.

*(Note: Source here = **form of communication**, not the person/group generating information.)*

5.2.2 By Channel

Information can be grouped by the **channels that disseminate it**:

- **Literature** (Primary, Secondary, Tertiary)
- **Organisations & Institutions**
- **Agencies** distributing information

A. Literature

Primary Sources

- **Characteristics**:
  1. New, original information or new interpretations.
  2. Unorganised, each unit separate.
  3. Widely scattered.
  4. Not yet assimilated into general knowledge.
- **Examples**: Research papers, journal articles, conference proceedings, official publications, theses, dissertations, project reports, diaries, memos, correspondence, personal files.

Secondary Sources

- **Characteristics**:
  1. Derived from primary sources.
  2. Organised & arranged systematically.

3. Collects scattered information.
4. Repository of assimilated/digested knowledge.
5. Provides bibliographic keys to primary literature.

- **Examples**: Bibliographies, current awareness bulletins, indexing journals, abstracting journals, reviews, state-of-the-art reports, progress/advance reports, reference books, dictionaries, encyclopaedias, directories.

Tertiary Sources

- **Characteristics**:
  1. Compilations of primary & secondary sources.
  2. Organised & arranged according to a definite plan.
  3. Serve as aids to search primary & secondary sources.
- **Examples**: Bibliographies of bibliographies, yearbooks, directories, guides to literature, research-in-progress lists, information source guides, organisational directories, human resource listings.

B. Types of Knowledge Information

- **Know-Why Information** → Scientifically oriented, available in secondary tools (databases, libraries, Internet), easy to access & transfer.
- **Know-How Information** → Technically oriented, harder to locate, less easy to transfer.

C. Information Institutions

- Libraries.
- Documentation & Information Centres.
- Information Analysis Centres.
- Others that collect, process, analyse & disseminate all three types of literature.

Classification of Information

Basis of Grouping	Categories	Remarks
By Distribution Agencies	- Booksellers - Subscription Agents - Clearing Houses - Information Brokers - Other commercial agencies	Primarily **commercial** in nature, selling information. Distinction from libraries/info institutions is **blurring due to IT**.
By Media	**Oral:** Person-to-person, one-to-one, one-to-many, many-to-many **Recorded:** Paper-print, Microforms, Audio, Visual, Audio-visual **Electronic/Digital**	Oral = voice info, with/without text. Other forms = textual/recorded.
By Recipient	- Individuals - Groups - Organisations - Institutions	All receive & use info for varied requirements.
By Information Needs	**By Standard:** Popular, Scientific, Technical **By Type:** Know-why, Know-how, Show-how	- Info is **shareable & democratic** (esp. via Internet). - **Show-how**: operational skills, tacit knowledge, often **unrecorded**, transferable only through personal contact.

Barriers to Information Flow

Category	Sub-types	Key Notes
Language-related	- Jargon - Neologism - Synonyms / Antonyms - Style / Form - Level of Presentation	Language is powerful, but misuse (technical jargon, complex styles) causes **failure in communication**.
Seepage & Scatter in Communication	- Cultural differences - Social differentiation - Socio-economic factors	Differences in **culture, society, and economy** distort or scatter communication. Needs proper presentation.
Multiplicity of Sources	- Comprehension - Perception - Misunderstanding - Alienation from reality	Too many sources = **confusion, misinterpretation, distorted perception**.
Problems of Volume, Misinformation & Delays	- Overpopulation of documents - Noise (pollution of info) - Propaganda / Rehashed data - Publication delays - Errors in abstracts, digests, translations - Issues in searching, accessing, processing, delivery, feedback	**Quantity ≠ quality**. Redundancy, misinformation, and delays weaken info flow.
Economic, Political & Legal Barriers	- High direct cost / overheads - Political instability / wars - Foreign exchange issues - Regulatory / legal restrictions (customs, censorship)	Costs and political/legal situations often **block access** to info resources.

5.3 Information Studies: Scope

The scope of information studies relates to:

- Communication process of **information transfer** (Source → Channel → Media → Recipient → User).
- Expanding dimensions of **information services**.
- The role of **Ranganathan's Five Laws** in information studies.

5.3.1 Ranganathan's Five Laws and Information Studies

Restated with focus on **Information**:

1. **Information is for Use**
2. **Every User his/her Information**
3. **Every Information its User**
4. **Save the Time of the User** (and Information Services staff)
5. **Information Institution is a Growing Organism**

(i) First Law: Information is for Use

- Information has value only when **used**, not just stored.
- Information is a **vital resource** in society, economy, and development.

- Relates to:
    - Development of document & non-document resources.
    - Organisation & management of information resources.
    - Techniques & tools for processing collections (any form).
    - Use of primary, secondary & tertiary literature.
    - Bibliometric studies (value, growth, development).
    - National & international information policies.

(ii) Second Law: Every User his/her Information

- Information services must be **user-oriented**.
- Analogous to **customer-focused services** in business.
- Involves:
    - Study of information gathering habits.
    - Use of different types of information.
    - Analysis of interest profiles (individuals, groups, institutions, projects, programmes).

(iii) Third Law: Every Information its User

- Core principle: **Right Information → Right User → Right Time**.
- Information transfer must be **use-oriented**.
- Marketing of information and innovative services required.
- Independent of form/media, focus is always on **utility**.

(iv) Fourth Law: Save the Time of the User

- Time is the most precious resource.
- Timeliness & speed = essence of service.
- Information Technology (IT) improves efficiency of services.
- Emphasis on:
    - Skilled professionals with IT training.
    - User education & information literacy.
    - Research in information handling.
    - User-friendly systems for **time-saving service**.

(v) Fifth Law: Information Institution is a Growing Organism

- Knowledge is a **dynamic & ever-growing continuum**.
- Institutions must adapt to changes in:
    - Knowledge growth.
    - Information environment.
    - Service mechanisms.
- Libraries & Information Centres = **self-adapting systems**.

5.4 Searching File – An Essential Component

A search file is an essential component of a database which describes the document collection of an Information Retrieval (IR) system. Generally, the search for information is through subjects or keywords. This implies that every aspect or characteristic of documents must be properly identified and indexed, which forms the essential component of a search file.

Steps in Creating a Search File:

a) Deciding the subject characteristics of documents

b) Translating these characteristics into indexing terms

c) Recording the terms with citation/location

d) Arranging terms in searchable order

5.4.1 Search Strategies and Pre-requisites

Search strategy is the action plan drawn to conduct a search. It encompasses several steps and levels of work in information retrieval.

Issues to Consider While Formulating a Search Statement:

i) The concepts or facets to be searched and their order
ii) The term(s) that appropriately represent the search concept
iii) The feature(s) of the retrieval system concerned
iv) The measures to be taken in revising a search statement

Developing a good search strategy requires knowledge about the nature and organization of target database(s) and also the exact needs of the user.

Categories of Searches (Chowdhury, 2004):

a) **High Recall Search** – when the user needs to find out all relevant items on the stated topic. Recall measures the proportion of relevant items retrieved in a given search session.
b) **High Precision Search** – when the user needs only relevant items with as few non-relevant items as possible. Precision measures the proportion of retrieved items that are relevant.
c) **Brief Search** – when the user requires only a few relevant items instead of all possible items.

5.4.2 The Pre-search Interview

The results of a search depend heavily upon a correct understanding of the user's precise needs. This understanding is developed through a **pre-search interview**, i.e., a conversation between a user and an information professional regarding the actual requirement.

Qualities of the Interviewer:

- Ability to conduct personal communication
- Conceptual skills
- Analytical skills
- Knowledge of file organization
- Understanding of indexing policy and vocabulary control
- Subject knowledge

The pre-search interview presupposes the existence of a **search intermediary**, particularly in mediated search processes.

Functions of Intermediaries:

- Ascertain exact information needs of the users
- Identify and translate concepts into IR system terms
- Delineate relationships among concepts
- Stipulate search parameters
- Select database(s) for search
- Identify alternative sources
- Formulate and review alternative search strategies
- Conduct past search review

According to **Taylor (1968)**, a searcher's query evolves in stages:

1. **Actual need →**
2. **Unexpressed need →**
3. **Conscious description (conscious need) →**
4. **Formalized need**

In online systems and reference interviews, query formulation is refined interactively with user interfaces.

5.5 Search Techniques

Different techniques are available to conduct searches effectively so that maximum relevant information is retrieved according to users' needs. The main techniques are:

5.5.1 Keyword and Phrase Search

- **Keyword Search**
  - Simplest form of search.
  - Conducted by entering one or more search terms.
  - The system searches the **inverted file (index)** for each keyword.
  - Terms may be entered via keyboard or selected from **vocabulary control tools** (subject headings, thesauri).
  - Multiple keywords are combined using **Boolean or proximity operators**.
- **Phrase Search**
  - Searches for the entire phrase rather than each individual keyword.
  - Only possible if the database fields are **phrase-indexed**.
  - If only single-term indexing is available, phrase searches require **proximity operators**.
  - Example: "climate change policy" (retrieves results where words occur together).
  - Supported differently in systems:
    - **DIALOG** – phrase preceded by commands like *S, SELECT, FIND*.
    - **AltaVista/Google-like systems** – enclosing phrase in **double quotes**.

5.5.2 Keyword and Subject Search

- **Keyword Search**
  - User enters one or more words from their query.
  - Keywords can appear anywhere in the database record (or limited to fields).
  - Operators can combine multiple keywords.
- **Subject Search**
  - User submits a **subject expression** matching assigned subject headings.
  - Conducted only on the **subject field** of the database.
  - Retrieval happens only when the search expression exactly matches indexer-assigned headings.
  - **Vocabulary control tools** (e.g., thesauri, subject heading lists) standardize the process.

5.5.3 Boolean Search

Boolean logic is widely used in IR systems. The three main operators are:

1. **AND Search**
   - Retrieves records containing **all search terms**.
   - More terms = more restrictions = fewer results.
   - Example: *Internet AND Web* → retrieves records containing both terms.
   - Too many ANDs may yield **no results**.
2. **OR Search**
   - Retrieves records containing **any** of the terms.
   - Expands search results.
   - Example: *Colleges OR Universities* → retrieves records with either or both terms.
   - Too many ORs may give an **unmanageably large set**.
3. **NOT Search**
   - Excludes records containing specific terms.
   - Example: *Search Engines NOT Hotbot* → retrieves records on search engines but excludes those mentioning Hotbot.
   - Output size decreases as more NOT terms are added.

Note:

- Many systems use alternative operators:
  - **+term** = must include (equivalent to AND).
  - **-term** = exclude (equivalent to NOT).
- Operators and syntax vary across search engines (e.g., AltaVista, HotBot, Google).

5.8 Truncation Search

- **Definition**: Technique to retrieve all forms of a word sharing a common root.
- **Example**: COMPUT* → COMPUTER, COMPUTING, COMPUTATION, COMPUTE.
- **Types**:
  - **Right truncation** → retrieves words with same beginning root (e.g., COMPUT*).
  - **Left truncation** → retrieves words with same ending (e.g., *hyl → methyl, ethyl).
  - **Middle truncation** → retrieves words with same beginning & ending but varied middle letters (e.g., col*r → colour, color).
- **Wildcard Use**: Allows substitution of characters at specific positions.
- **Common Operators**: *, $, !, ?.
- **Note**: Operators vary across systems.

5.9 Proximity Search

- **Definition**: Search technique to specify relative position of two or more search terms.
- **Functions**:
  1. Adjacent word search.
  2. Words within defined distance.
  3. Words within same paragraph/section.
- **Benefit**: More specific than Boolean AND search.
- **Examples**:
  - *sun within 4 words after moon*
  - *ice within 2 words after fire*
  - *fire within 5 words of ice*

5.10 Field-Specific Search

- **Definition**: Restricting searches to a particular field in a database.
- **Purpose**: Produces **more specific results**.
- **Examples (DIALOG)**:
  - SELECT computer?/TI → Title field only.
  - S (information OR communication)/DE,ID → Descriptor/Identifier fields.
  - S S12/TI,AB → Title or Abstract fields.
- **Additional Options**: Prefix codes for author/corporate source search.
  - Example: SELECT AU=Chowdhury,G.

5.11 Limiting Search

- **Definition**: Restricting searches using parameters/criteria.
- **Common Parameters**:
  - Language
  - Year of publication
  - Type of source (patents, reports, journals, etc.)
- **Examples (DIALOG)**:
  - SELECT URBAN(S)CRIME?/ENG → Search limited to English.
  - S TRANSISTOR?/PAT → Search limited to patents.

5.12 Range Search

- **Definition**: Used to retrieve records within specified numerical or date ranges.
- **Operators (vary across systems)**:
  - Greater than (>)
  - Less than (<)
  - Equal to (=)

    - Not equal to (≠ or </>)
    - Greater than or equal to (≥)
    - Less than or equal to (≤)
- **Examples (DIALOG)**:
    - S Internet/2004 → records from 2004.
    - S Internet/2003:2004 → records between 2003–2004.

5.13 The Information Search Process Basic Features

- **Common to both manual & online searching**:
    1. Matching user needs with available information in IR system.
    2. Applying criteria (surrogates, exact form, etc.).
    3. Use of **subject surrogates** as the main approach for searching.

5.14 Search Tactics (Bates, 1979)

- **Definition**: Techniques to improve effectiveness of a search.
- **Categories**:
    1. **Monitoring tactics** → keep search on track.
    2. **File structure tactics** → navigate within the database/system.
    3. **Search formulation tactics** → help in designing/redesigning queries.
    4. **Term tactics** → selection and reuse of search terms.

5.15 Steps for Successful Online Search

1. Decide which database(s) to search.
2. Predict terms authors/indexers may have used.
3. Use thesaurus of the database for controlled vocabulary.
4. Combine terms (Boolean operators etc.) to create query.
5. Apply appropriate search features/operators of system.
6. Input search statement.
7. Repeat (5) & (6) until desired output achieved or search fails.
8. Identify relevant items among retrieved results.

5.16 Coordination of Terms

- A **major task** in search formulation.
- Determines effectiveness of final results.
- **Boolean operators** traditionally used.
- **Vector space model** (and variations) also applied in modern IR systems.
- Despite advances, **basic search process remains the same** across online retrieval systems.

5.17 Online Search Services

5.17.1 Components of Online Search Services

- **Database Producers** → Create and provide databases.
- **Search Service Providers (Vendors)** → Give access to databases and search software.
- **Communication Links** → Connect users to host databases (now mostly via Internet).
- **Local Workstation** → User's device used for search access.

5.17.2 Definition

- Online search services (vendors) are **organisations providing value-added database processing** and offering search services.

5.17.3 Examples of Online Search Services

a) Major Multi-Database Vendors

1. **Dialog** → Access to 800M+ records in 900 databases across disciplines.
2. **OCLC FirstSearch** → 72+ databases, including WorldCat, ArticleFirst, ProceedingsFirst.
3. **Ovid** → Full-text journals, textbooks, bibliographic databases in various disciplines.

4. **STN** → Scientific, technical, patent and business databases (chemistry, engineering, life sciences, pharma, etc.).

b) Full-text Journal & Book Providers

1. **EBSCO** → Large full-text & bibliographic databases for libraries.
2. **Ingenta** → Full-text of 5,400+ publications from 230+ publishers.
3. **ProQuest** → Millions of articles from journals, newspapers, magazines.

5.17.4 Sources for Further Information

- Publications:
  - Forrester & Rowlands (1999)
  - Large, Tedd & Hartley (1999)
  - Chowdhury & Chowdhury (2001b)
- Websites of respective online search services.

5.18 Quantitative Research

5.18.1 Definition

- Research strategy focused on **quantifying data collection & analysis**.
- Based on **deductive approach** → emphasizes testing of theories.
- Rooted in **empiricist & positivist philosophy**.
- Uses **mathematical models, hypotheses, measurement & statistics**.

Library Examples (Quantitative Research in Libraries):

1. Surveying number of books issued per month in a library.
2. Measuring student attendance in a digital library.
3. Analyzing citation counts of research articles in a subject.
4. Studying frequency of database searches by library users.
5. Evaluating library budget allocation through statistical methods.

5.18.2 Scope

- Used in **natural, applied, social & formal sciences**.
- In libraries → applied to **user studies, bibliometrics, usage analysis, LIS research**.

5.18.3 Situations Where Not Appropriate

1. Studying **in-depth / complex topics**.
2. Studying **subjective experiences & opinions**.
3. **Exploratory research** (when topic is new).
4. Studying **sensitive/controversial topics**.

Library Examples:

- User satisfaction with library ambience (subjective).
- Exploring feelings about librarian–student interaction.
- Understanding reasons for low usage of e-resources.
- Exploring trust in open access publishing.
- Emotional impact of losing rare manuscripts.

5.18.4 Objectives

- Develop & employ **mathematical models & hypotheses**.
- Ensure **measurement links empirical observation to theory**.
- Generate **unbiased, generalizable results**.

Library Examples:

1. Testing if digital libraries reduce physical visits.
2. Analyzing relation between number of journals subscribed and research output.
3. Measuring correlation between library opening hours & attendance.
4. Studying growth of e-book usage in academic libraries.
5. Testing if library orientation programs increase resource usage.

5.18.5 Quantitative Data

- Data in **numerical form** (statistics, percentages, counts).
- Analysis via **statistical tools (SPSS, R, Excel, etc.)**.

Library Examples:

1. Number of interlibrary loan requests.
2. Percentage of students using OPAC vs Google Scholar.
3. Average books borrowed per faculty member.
4. Statistical analysis of journal subscription cost trends.
5. Usage statistics of e-resources (downloads per year).

5.18.6 Contrast with Qualitative Research

- **Quantitative** → numbers, generalization.
- **Qualitative** → meaning, experience, case-specific.
- Often used **together for triangulation**.

Library Examples:

- Quantitative: "How many books borrowed?"
- Qualitative: "Why do students prefer e-books?"
- Quantitative: "How many users log in to databases?"
- Qualitative: "What problems do users face with login?"
- Both combined: Mixed method study of library service effectiveness.

5.18.7 Overview (Steps in Quantitative Research)

1. Generate **models, theories & hypotheses**.
2. Develop **measurement instruments**.
3. **Control & manipulate variables**.
4. Collect **empirical data**.
5. **Model & analyze data** statistically.

Library Examples:

1. Hypothesis: "Library orientation increases e-resource usage."
2. Questionnaire design → measuring user awareness.
3. Variable control → student type (UG/PG).
4. Data collection → survey of 500 students.
5. Analysis → statistical testing of differences.

5.18.8 Limitations

- Cannot explain **reasons behind responses**.
- May not capture **underrepresented populations**.
- Time-consuming for **large datasets**.

Library Examples:

1. Statistics show low usage, but reasons (lack of training, awareness) unknown.
2. Data may exclude non-registered visitors.
3. Collection of circulation data over 5 years is lengthy.
4. Surveys may not reach remote learners.
5. Large bibliometric analysis may miss context of citations.

5.18.9 Use of Statistics in Quantitative Research

- Core of quantitative studies.
- Tools: **SPSS, R, Excel**.
- Used for **hypothesis testing, trend analysis, correlation, regression, factor analysis**.

Library Examples:

1. Analyzing borrowing patterns by gender/department.

2. Regression analysis of e-resources vs student grades.
3. Citation analysis of library science journals.
4. Factor analysis of variables affecting library use.
5. Opinion surveys with percentage tabulations (e.g., “80% students prefer e-books”).

5.5 Qualitative Research

5.5.1 Definition

Qualitative research is a type of research that aims to gather and analyse non-numerical (descriptive) data in order to gain an understanding of individuals' social reality, including understanding their attitudes, beliefs, and motivation.

- It typically involves in-depth interviews, focus groups, or field observations.
- It helps explore complex phenomena or people's experiences and perspectives.
- Qualitative methods include **ethnography, grounded theory, discourse analysis, and interpretative phenomenological analysis**.

Library-related examples:

1. Conducting in-depth interviews with library users about their satisfaction with reference services.
2. Observing how students interact with digital resources in the library’s e-learning zone.
3. Organizing focus groups to explore community expectations from a public library.
4. Studying librarian–user interactions at the circulation desk.
5. Analyzing user narratives about the importance of libraries in their academic journey.

5.5.2 Background

Qualitative research has been informed by several strands of philosophy, including **positivism, postpositivism, critical theory, and constructivism**. It focuses on aspects of human life like beliefs, morality, imagination, and cultural expression.

Library-related examples:

1. Understanding cultural differences in how communities perceive public libraries.
2. Studying how digital libraries impact reading habits compared to print libraries.
3. Exploring ethical considerations in library censorship policies.
4. Investigating the social role of libraries in preserving local heritage.
5. Analyzing the imagination and creativity expressed through children’s storytelling sessions in libraries.

5.5.3 Approaches to Inquiry

Influenced by traditions such as **phenomenology, social constructionism, symbolic interactionism, and positivism**. Each shapes how researchers interpret qualitative data.

Library-related examples:

1. Phenomenological study of users’ lived experiences in using OPAC (Online Public Access Catalogue).
2. Social constructionist study on how library spaces shape collaborative learning.
3. Symbolic interactionist analysis of library signage and user interpretation.
4. Study of the role of libraries in constructing digital literacy norms.
5. Examining librarian–student interactions in academic settings.

5.5.4 Philosophical Traditions

- **Phenomenology**: focuses on individual experiences.
- **Grounded theory (constructionism)**: develops theory from observations.
- **Symbolic interactionism**: studies meaning in social interactions.
- **Positivist approaches**: seek objective understanding.

Library-related examples:

1. Phenomenological study on how differently-abled users experience accessibility in libraries.

2. Grounded theory approach to developing a model of digital resource usage.
3. Symbolic interpretation of how libraries are seen as "knowledge temples."
4. Positivist study of information-seeking behaviour in digital vs. physical contexts.
5. The role of libraries in shaping knowledge identity among students.

5.5.5 Sources of Data

Sources include **interviews, social interaction videos, observation notes, reports, and cultural artifacts**. Case studies and triangulation are often used.

Library-related examples:

1. Analyzing interview transcripts of users describing library services.
2. Using archival records (membership data, old catalogues) for qualitative study.
3. Studying cultural artifacts like rare manuscripts in a special collection.
4. Recording observations of user behaviour in reading halls.
5. Case study of a digital library implementation project.

5.5.6 Data Collection Methods

(a) Interviews

Researchers use structured/unstructured interviews to collect deep insights.

Library-related examples:

1. Interviewing librarians about cataloguing challenges.
2. Interviewing library staff on user service improvement strategies.
3. Talking to students about e-journal usage.
4. Interviewing senior citizens about library community programmes.
5. Interviewing researchers about reliance on digital repositories.

(b) Participant Observation

Ethnographers participate directly in the culture they study.

Library-related examples:

1. Observing how children behave during story hour in libraries.
2. Participating in reading clubs to understand group reading culture.
3. Observing how students use Wi-Fi-enabled study spaces.
4. Immersing in library maker-spaces to study collaborative innovation.
5. Observing librarian roles during book exhibitions.

5.5.7 Recursivity

Refers to the flexibility of research design. Researchers may adjust the research design during data collection and analysis based on emerging results.

Library-related examples:

1. Changing research focus from print usage to digital usage midway after observing trends.
2. Modifying interview questions when new user concerns about privacy emerge.
3. Expanding research scope to include e-resources after user feedback.
4. Adjusting sampling strategy to include underrepresented library users.
5. Revising data collection techniques when a library shifts from physical to hybrid services.

Common Qualitative Data Analysis (QDA) Software Includes:

- **NVivo** – by *Lumivero (formerly QSR International)*
- **ATLAS.ti** – by *ATLAS.ti Scientific Software Development GmbH*
- **MAXQDA** – by *VERBI Software GmbH*
- **Dedoose** – by *SocioCultural Research Consultants, LLC*
- **HyperRESEARCH** – by *ResearchWare, Inc.*
- **Quirkos** – by *Quirkos Ltd.*
- **QDA Miner** – by *Provalis Research*
- **Transana** – by *The Transana Project, University of Wisconsin–Madison*

- **CATMA (Computer Assisted Textual Markup and Analysis)** – by *University of Hamburg*
- **f4analyse** – by *audiotranskription.de*
- **RQDA** – by *Open-source project (developed under R platform)*
- **WebQDA** – by *Universidade de Aveiro & Micro IO, Portugal*

5.7 Library Networks: An Overview

5.7.1 Need for Library Networks

- Due to **information explosion** and rising cost of information services, individual libraries cannot meet all user needs.
- Earlier, resource sharing was done mainly through **Inter-Library Loan (ILL)**.
- With the advent of **Information Technology (IT)**, libraries now operate in a **networked environment**.
- **Advantages:**
  - Sharing of data and information resources.
  - Quick, reliable, and accurate access.

5.7.2 Definitions of Library Networks

- **Franklin David Jebaraj & Fredrick Robin Devadoss:**
  "A library network is broadly described as a group of libraries coming together with some agreement of understanding to help each other with a view to satisfying the information needs of their clientele."
- **NCLIS (1975):**
  - Two or more libraries/organizations exchange information through communication for a **common functional purpose**.
  - Formal arrangement ensures resources, services, and materials are available to all potential users.
  - Libraries may belong to different jurisdictions but agree to **serve each other equally**.
  - Computers & telecommunications used to facilitate communication.

5.7.3 Simple Definition

- A **group of libraries** at different locations connected via **computers and communication networks**.
- **Purpose:** Sharing of information, data, and resources to provide **better services**.

5.7.4 Importance of Library Networking

- Inadequate library budgets.
- Rising prices of documents.
- Huge availability of resources.
- Difficult for a single library to acquire everything.
- Library networking = **cooperation + resource sharing**.

5.8 LIBRARY NETWORKS: THE INDIAN SCENARIO

5.8.1 History and Growth of Library Networks in India

- **1958 – Scientific Policy Resolution** initiated by **Pt. Jawaharlal Nehru** emphasized the development of *scientific temper*.
- As a result, several **committees and commissions** were set up with recommendations for library cooperation:
  - **Sinha Committee Report (1959)**
  - **Ranganathan Report to UGC (1965)**
  - **Peter Larzer Committee Report (1972)**
  - **V.A. Kamath Report (1972)**
- All reports emphasized **cooperation among libraries at local, regional, and national levels**.

5.8.2 Developments during the 7th Five-Year Plan (1985–90)

- **Planning Commission (GOI)** appointed a working group under **Dr. N. Seshagiri** to study:
  - Modernization of library services.
  - Inter-linking of library systems.
- **Prof. D. P. Chattopadhyay Committee** formed to evolve a **national policy** on library information systems.
  - Report stressed **resource sharing** and linking **education & research organisations**.

5.8.3 Establishment of NISSAT (1977)

- **National Information System for Science and Technology (NISSAT)** created as a project in **DSIR, Government of India**.
- Played a key role in initiating **Metropolitan Library Networks** in India.
- **Objectives:**
  - Strengthen resource sharing.
  - Avoid duplication of resources.
  - Minimize acquisition costs.

5.8.4 Metropolitan City Library Networks Established (Funded by NISSAT)

- **CALIBNET (Calcutta Library Network)** – 1986.
- **DELNET (Delhi Library Network)** – 1988 (later became *Developing Library Network*).
- **PUNENET (Pune Library Network)** – 1992.
- **BONET (Bombay Library Network)** – 1994.
- **ADINET (Ahmedabad Library Network)** – 1993.
- **MYLIBNET (Mysore Library Network)** – 1995.

5.8.5 Expected Functions of Networks

- Promote **resource sharing**.
- Prepare **union catalogues** of books and periodicals.
- Create **centralised databases**.

5.8.6 Present Status

- **NISSAT operations ceased in 2004**, but its initiatives laid the foundation of **library networking in India**.

Major Library Networks in India

Network	Year / Origin	Sponsor / Parent Body	Location	Key Services / Features
INFLIBNET (Information and Library Network)	1991 (independent centre in 1996)	UGC (Autonomous Inter-University Centre)	Gujarat University Campus, Ahmedabad	Shared cataloguing; Union catalogues; Online catalogue access; Catalogue production; Bibliographic databases; SDI & CAS; Union databases (Books, Periodicals, Experts); CD-ROM & Internet-based services; Document delivery; Academic networking
DELNET (Developing Library Network)	1988 (Delhi Library Network, renamed 2001); Registered 1991	Sponsored by NISSAT; Promoted by NIC, Dept. of IT, Govt. of India & IIC, New Delhi	New Delhi	ILL Online; Document delivery; Training; Bibliographic databases (Books, Journals, Articles, Specialists, CD-ROMs, Videos, Sound, Newspapers); Referral services; Internet connectivity; Software

				products: DELSIS, DEL-DOS, DEL PLUS, DELMARC
CALIBNET (Calcutta Library Network)	1986	Funded by NISSAT, DSIR; Managed by Calcutta Society	Kolkata, West Bengal	Centralised Database (CDB); ConFile (journal contents); CalibOrder (full-text backup); ConAlert (customised bibliographic info); RetroFile (research trends); CalibLink (email); Access to Indian/foreign databases; Software: **SANJUKTA** (retrieval), **PARAPAR** (conversion); CAS, SDI, Union Catalogue
ADINET (Ahmedabad Library Network)	1993	Sponsored by NISSAT; Registered society	Ahmedabad, Gujarat	Database of periodicals (100+ libraries); ILL & photocopy supply; LIS journal content pages; LIS database directory; JOLI (Jobs for Librarians); Internet & computer training; Library consultancy (cataloguing, classification, stock verification, manpower dev.); Resume upload & career support
MYLIBNET (Mysore Library Network)	1995	NISSAT, DSIR	CFTRI Campus, Mysore	Training programmes for LIS professionals; Technical assistance; Union Catalogue of Periodicals; Online record updating; ERNET email services
PUNENET (Pune Library Network)	1992	Joint: Univ. of Pune, C-DAC, NCL; Funded by NISSAT	Bioinformatics Centre, Pune	Databases: Union Catalogue of Periodicals, Booksellers, LIS professionals, Pune libraries; Internet gateway; E-mail & Internet connectivity; CAS, photocopy services, CD-ROM access; International standard ISO 2709 for data exchange; Planned: Indian language manuscript databases, Ulrich's database
MALIBNET (Madras Library Network)	1991 (Society in 1993)	Executed by INSDOC (now NISCAIR)	Chennai (Madras)	E-mail, photocopy, document delivery; Specialised databases (abstracts, serials); NISCAIR databases; Directory of Current Serials in Madras; Journal contents database; Members may offer info services
BONET (Bombay Library Network)	1994	Supported by NISSAT, DSIR	Mumbai (Bombay)	25+ member libraries; Access to databases & CD-ROMs; Seminars & training programmes for LIS professional development

Library Networks: International Scenario

Library Network	Details	Services / Features
OCLC (Online Computer Library Centre) (Founded 1967, Ohio, USA; renamed in 1981)	- First successful computer-based library network. - Began with 50 Ohio colleges, expanded worldwide. - Membership: 50,000+ libraries in US & 84 countries. - Built **WorldCat**, the largest union catalogue.	- Cataloguing & Metadata. - Collection Management. - Digital Collection & Preservation. - Reference Services (FirstSearch). - Resource Sharing (ILL). - E-Content (NetLibrary).
WorldCat (by OCLC)	- Global union catalogue built by 9000+ institutions. - Contains millions of records, from ancient tablets to e-resources.	- Cataloguing & Resource Sharing backbone. - Provides cataloguing records & metadata. - Tools: Connexion, PromptCat.
RLIN (Research Libraries Information Network) (1974, USA)	- Developed by **RLG**, a consortium of 160+ universities, libraries, archives & museums. - Mission: Solutions for digital-era access & preservation. - Replaced by **RLIN21** (web-based).	- Cataloguing & Authority Control. - Access to RLG databases (AMICO, SCIPIO, cultural & rare book collections). - Resource Sharing (SHARES). - Union cataloguing (RLIN21 client).
JANET (Joint Academic Network, UK) (1984)	- UK education & research network. - Funded by UK Govt, operated by **UKERNA** under JISC. - Connects all higher education & research councils. - Part of global Internet.	- **JANET-CERT** (Computer Emergency Response Team). - Video conferencing & training. - NetSight (network monitoring). - Co-location services. - Usenet, Mail, Web hosting/filtering. - **Super JANET** (core backbone, optical fiber, expanded in multiple phases).
CURL (Consortium of University Research Libraries, UK) (1987)	- Mission: increase sharing of research resources. - Members: 22 universities + British Library + National Libraries of Scotland & Wales. - Provides union catalogue **COPAC**.	- Bibliographic records database (38+ million). - Free access for members, fee for non-members. - COPAC: 30+ million merged records. - Future: digitisation, preservation, e-resources, consortia networking.
CALIS (China Academic & Library Information System)	- Nationwide academic consortium funded by Chinese Ministry of Education. - Part of Higher Education Public System. - Uses **CERNET** as backbone.	- Cataloguing & Union Catalogues. - Resource Sharing, ILL, Doc Delivery. - Databases: Dissertation Abstracts, Conference Proceedings, Current Chinese Periodicals.

		- Coordinated e-resource licensing. - Training & preservation. - Future: expand e-resources, digitisation, 3-level (local, regional, national) network.
AARNet (Australia's Academic & Research Network) (1989)	- Originated Internet in Australia. - Managed by **AARNet Pty Ltd** (non-profit). - Developed AARNet 2 (1997) & AARNet 3 (2004). - Supports 80,000+ staff & students.	- Internet backbone for research/education. - National On-Net/Off-Net & International On-Net/Off-Net services. - Access to **GrangeNet** (high-capacity research network). - Value-added services: Video/IP, Voice/IP, Carrier services, Object Mirror. - Advanced workshops & flexible course delivery.

5.9 National Digital Library of India (NDLI)

5.9.1 Overview

- Sponsored by the **Ministry of Education (MoE), Government of India**.
- Developed by the **Indian Institute of Technology (IIT) Kharagpur**.
- Major initiative under the **National Mission in Education through ICT (NMEICT)**.
- **Single-window platform** providing access to diverse learning resources.
- Brings together **digital repositories from India and worldwide**, accessible to learners of all demographics.

5.9.2 Genesis and Objective

- Vision of **Ministry of Education & NMEICT**.
- Aim: To create a **digital repository of learning resources** with a **single-window search facility**.
- Designed to meet the **diverse educational needs** of learners across the nation.

5.9.3 Development Phases

- **NDLI Phase I (Pilot Project)**: April 2015 – 30th September 2017.
- **NDLI Phase II**: 1st October 2017 – 31st March 2020 (extended to 31st March 2021 due to **Covid-19**).
- **NDLI Phase III**: 1st April 2021 – 31st March 2026 (currently ongoing).

5.9.4 Launch

- **National Launch** of NDLI Portal: **19th June 2018**.
- Portals:
  - www.ndl.gov.in
  - https://ndl.iitkgp.ac.in

5.9.5 Key Personalities Associated with NDLI

- **Prof. Amit Patra**
  - Director, IIT BHU.
  - Additional Charge: Director, IIT KGP.
  - Principal Investigator (PI), NDLI.
- **Prof. Saswat Chakrabarti**
  - Professor, Department of Electrical & Electronic Engineering, IIT KGP.

    - Chairman, Central Library, IIT KGP.
    - Joint Principal Investigator (Jt. PI), NDLI.
- **Dr. B. Sutradhar**
    - Chief Librarian, Central Library, IIT Kharagpur.
    - Joint Principal Investigator, NDLI.

5.10 Information And Library Network (INFLIBNET) Centre

5.10.1 Overview

- Located at **Gandhinagar, Gujarat**.
- Autonomous **Inter-University Centre (IUC)** of **UGC, New Delhi**.
- Established: **March 1991** (under IUCAA) → Independent IUC since **June 1996**.
- Aim: **Modernize university libraries** using ICT, promote **scholarly communication**.

5.10.2 Mission and Vision

- Create a **virtual academic network** of people & resources.
- Provide **seamless, reliable access** to scholarly resources.
- Strengthen **ICT infrastructure** in institutions.
- Develop **tools & techniques** for secure electronic access.
- Promote **digital repositories & open access initiatives**.

5.10.3 e-Consortium

a) e-ShodhSindhu

- Consortium for higher education e-resources.
- Provides **10,000+ journals, 1,64,300+ e-books, 4 databases** via ESS; **6,00,000+ e-books via NDLI**.
- Accessible to **Universities, Colleges & CFTIs**.

b) N-LIST Programme

- Joint project of **e-ShodhSindhu, INFLIBNET, INDEST-AICTE (IIT Delhi)**.
- Provides:
    - Cross-subscription of e-resources.
    - Direct access to **students, researchers & faculty of colleges**.
    - Authentication through INFLIBNET servers.

c) INFED (Access Management Federation)

- India's first federation for **authentication** of users (based on Shibboleth).

d) InfiStats

- Portal for **usage statistics of e-resources**.

e) ShodhShuddhi

- Launched: **21 Sept 2019**.
- Provides **plagiarism detection software (URKUND)** to **1000+ institutions** (Central/State/Private Universities, CFTIs, IUCs).

5.10.4 Library Automation

a) IndCat

- Union online catalogue of books, theses, journals.
- Contains **1.25 crore+ bibliographic records**.

b) SOUL (Software for University Libraries)

- Integrated Library Management System.
- Widely installed automation software in India.

5.10.5 e-Content and e-Learning

- **e-PG Pathshala**: UGC initiative under NME-ICT → gateway for PG courses.
- **e-Adhyayan**: 700+ PG e-books (from e-PG Pathshala).
- **UGC MOOCs**: PG-level MOOCs on **SWAYAM** platform (technical partner: INFLIBNET).

- **e-Pathya**: Offline PG course package for distance/campus learners.
- **Vidya-Mitra**: Portal to access all e-content from NME-ICT projects.
- **SWAYAM PRABHA**: 34 DTH channels (24x7 educational content).
- **UGC-MOOCs (SWAYAM vertical)**: To ensure access, equity & quality.

5.10.6 Open Access Initiatives

- **ShodhGanga**: Indian theses repository (ETDs).
- **ShodhGangotri**: Repository of research synopses, MRPs, PDFs, Fellowships → linked to ShodhGanga.
- **IR@INFLIBNET**: Institutional repository of INFLIBNET (articles, training materials, newsletters).
- **InfoPort**: Subject gateway for **Indian scholarly e-resources**.

5.10.7 Scholarly Network

- **Vidwan**: Database of experts (faculty, scientists, researchers). Supports govt. panels & committees.
- **IRINS (Indian Research Information Network System)**:
    - Research Information Management service.
    - Developed with Central University of Punjab.
    - Integrates with IDs (ORCID, Scopus ID, Google Scholar ID, etc.).

5.10.8 Projects and Consultancy

- **ICSSR Data Service**: Repository of **social science datasets** (NSS, ASI, etc.).
- **NIRF (National Institutional Ranking Framework)**: Launched **2015**. Methodology covers TLR, Research, Outcomes, Outreach, Perception.
- **ARIIA**: Ranking framework for **Innovation & Entrepreneurship Development**.
- **E-NBA**: Online accreditation workflow platform.
- **NTA (National Testing Agency)**: Conducts national-level entrance exams (efficient & transparent).
- **Study in India (2018)**: Interface for international students (SAARC, Africa, SE Asia, etc.).
- **Ek Bharat Shreshtha Bharat**: Cultural, linguistic & academic exchange programme.
- **PMMMNMTT**: Mission for **teachers & teaching quality improvement**.

5.10.9 Conventions & Training

- **CALIBER**: International convention for LIS professionals, IT experts, consultants.
- **PLANNER**: Bi-annual convention for **North-Eastern Region** (library automation, networking).
- **ICT Skill Development Programmes**:
    - Regional training in automation (IRTPLA).
    - Awareness programmes for e-resources.
    - Short & long-term specialized training.
    - SOUL training workshops.

Chapter 6: Information Science and Research Methods

6.1 BIBLIOMETRICS

6.1.1 Origin of the Term

- Term **bibliométrie** first used by **Paul Otlet (1934)** → "measurement of aspects related to publication and reading of books/documents."
- Anglicized form **bibliometrics** first used by **Alan Pritchard (1969)** in *"Statistical Bibliography or Bibliometrics?"*.
- Defined as: *"application of mathematics and statistical methods to books and other media of communication."*
- Replaced the older term **statistical bibliography** (considered clumsy and unclear).

6.1.2 Concept and Scope

- Concerned with **counting & measuring**: books, articles, citations, publications.
- Related but distinct from **scientometrics** (*naukometriya*, Russian) → measures scientific activity.
- In practice → overlap since **citation data** became key for evaluation.
- Expanded into new fields: **infometrics, webometrics, cybermetrics** (1990s–2000s).
- Extended to **non-scientific production & information retrieval**.

6.1.3 Historical Development

- **12th century**: Jewish indexes show early bibliometric work.
- **1917**: Cole & Eales → publications as measurable, permanent, accessible records.
- **1922**: E.W. Hulme → publications = measure of civilization.
- Till **1970s**: bibliometrics not widely accepted (viewed as simplistic).

6.1.4 Emergence as a Research Field

- Advanced by **Eugene Garfield** & **D.J. de Solla Price**.
- Led to creation of **Science Citation Index (SCI)**.
- **Impact Factor (IF)** introduced by Garfield & Irving Sher (1960s):

$$\mathrm{IF}_{2017} = \frac{\mathrm{Citations}_{2017}}{\mathrm{Publications}_{2016} + \mathrm{Publications}_{2015}} = \frac{74090}{880 + 902} = 41.577.$$

- Example: *Nature* (2017) → **41.577** (74,090 citations ÷ 1,782 publications).
- Simplicity → major reason for wide adoption.

6.1.5 Criticism and Alternatives

- Alternatives exist but none widely accepted.
- IF dominates due to **clarity, ease of interpretation & standardization**.

6.1.6 Garfield's Contributions

- Supported **science history & sociology research**.
- **1964**: *The Use of Citation Data in Writing the History of Science* → applied citation data to discoveries (e.g., DNA).
- **2001**: Launched **HistCite** (with Pudovkin & Istomin) → **algorithmic historiography**.

Assessment of Leading Publication Metrics and Altmetrics Open Science Principles

Metric	Provider	Sources	Free access	Data access	Open data	Open software
Journal Impact Factor	Clarivate	Citations (Web of Science)	No	No	No	No
SCImago Journal Rank (SJR)	Elsevier	Citations (Scopus)	Yes	Yes	No	No
SNIP	Elsevier	Citations (Scopus)	Yes	Yes	No	No
Eigenfactor	Clarivate	Citations (Web of Science)	Yes	No	No	No
Google Journal Ranking	Google Scholar	Citations (Google)	Yes	No	No	No
h-index	Clarivate (Web of Science)	Citations (Web of Science)	No	No	No	No
	Elsevier (Scopus)	Citations (Scopus)	No	No	No	No
	Google Scholar	Citations (Google)	Yes	No	No	No
Altmetrics	PLUM Analytics	Varied sources	No	No	No	No
	Altmetric (Macmillan)	Varied sources	Partial	No	No	No
	PLOS	Varied sources	Yes	Yes	Partial	Yes
	ImpactStory	Varied sources	Yes	Yes	Partial	Yes
Open Citation Data	OpenCitations Corpus	Varied sources	Yes	Yes	Yes	Yes

6.2 WEBOMETRICS (CYBERMETRICS)

6.2.1 Definition & Origin

- **Webometrics (or Cybermetrics)** → measures the **World Wide Web** (hyperlinks, structure, usage patterns).
- **First defined by Björneborn & Ingwersen**:
  "Study of the quantitative aspects of the construction and use of information resources, structures, and technologies on the Web drawing on bibliometric and informetric approaches."
- **Coined by Almind & Ingwersen (1997)**.
- **Second definition**: *"Study of web-based content with quantitative methods for social science research"* → aimed at wider **social sciences application**.

6.2.2 Scope & Relation to Other Fields

- Related scientific fields:
  - **Bibliometrics**
  - **Informetrics**
  - **Scientometrics**
  - **Virtual Ethnography**
  - **Web Mining**
- Focuses on **quantitative study of the Web** rather than only traditional publications.

6.2.3 Methods & Tools

- Analysis of:
  - **Hyperlinks**

    - **Web structure (graphs)**
    - **Usage patterns (traffic, access)**
- Example: *Site-based graph relationships* → cooperative models of web communication.

6.2.4 Web Impact Factor (WIF)

- Proposed by **Ingwersen (1998)**.
- **Formula**:

$$WIF = \frac{\text{No. of pages in a website receiving external links}}{\text{Total no. of web pages in the site (accessible)}}$$

    - Issues: **Power law distributions** → created distortions in results.
- Alternatives: Used **size of institution** or other indicators instead of only number of webpages.

6.3 ALTMETRICS (ALTERNATIVE METRICS)

6.3.1 Definition & Origin

- **Altmetrics = "Alternative Metrics"** → non-traditional **bibliometric indicators**.
- Proposed in **2010** (from **#altmetrics hashtag**).
- Generalization of **Article-Level Metrics (ALM)**.
- Measures impact of not only articles but also **people, journals, books, datasets, presentations, videos, code repositories, webpages, etc.**

6.3.2 Scope & Features

- **Gathers data** via **public APIs** across platforms.
- Unlike traditional metrics, it covers:
    - Social media mentions
    - Online news/media coverage
    - Online reference managers (e.g., Mendeley)
    - Blogs, Wikipedia, discussion forums
- Shows **immediate, uncited, and broader impact** (beyond academia).

6.3.3 Applications

- Used in:
    - **Research filtering & discovery**
    - **Promotion and tenure dossiers**
    - **Grant applications**
    - **Ranking of newly published articles**
- Helps measure **early visibility** of research.

6.3.4 Adoption & Examples

- **Projects/Companies**: ImpactStory, Altmetric, Plum Analytics, Overton.
- **Publishers using Altmetrics**:
    - PLOS, BioMed Central, Frontiers, Nature Publishing Group, Elsevier, NIHR Journals Library.
- **Timeline**:
    - 2008 → *Journal of Medical Internet Research* collected tweets.
    - 2009 → PLOS introduced article-level metrics.
    - Funders (e.g., UK MRC) & universities (e.g., University of Pittsburgh) started adopting.

6.3.5 Challenges & Limitations

- **Reduced sources**: Some services closed (e.g., Connotea), APIs restricted (e.g., PlumX removed Twitter metrics in Aug 2023).
- **Skewed results**: Small attention can push article to **upper quartile**.

- **Need for large knowledge base** for balanced statistics.

6.3.6 Classification of Altmetrics (ImpactStory / PLOS)

1. **Viewed** – HTML views, PDF downloads.
2. **Discussed** – journal comments, blogs, Wikipedia, Twitter, Facebook, etc.
3. **Saved** – Mendeley, CiteULike, other bookmarks.
4. **Cited** – tracked in Web of Science, Scopus, CrossRef.
5. **Recommended** – expert reviews (e.g., F1000Prime).

7.1 ALA CODE OF ETHICS

7.1.1 Introduction

- Framework of **values & ethical responsibilities** for librarianship.
- States the **principles of intellectual freedom, access, fairness, and integrity**.
- Adopted **1939**, amended in **1981, 1995, 2008, and 2021**.
- Responsibility of **Committee on Professional Ethics (COPE)**.
- Provides **broad guidance**, not rigid rules → helps resolve **ethical dilemmas**.

7.1.2 Core Principles

1. **Service to Users** – Provide highest level of service through:
    - Organized resources
    - Equitable service policies
    - Unbiased, accurate, courteous responses
2. **Intellectual Freedom** – Uphold free access to information; resist censorship.
3. **Privacy & Confidentiality** – Protect each user's right to privacy in seeking/using information.
4. **Intellectual Property Rights** – Respect copyrights; promote balance between **users' rights & creators' rights**.
5. **Respect for Colleagues** – Treat co-workers fairly; safeguard welfare and rights of employees.
6. **Avoiding Conflicts of Interest** – Do not promote private interests over users, colleagues, or the institution.
7. **Professional Integrity** – Separate personal beliefs from professional duties; ensure fair access to resources.
8. **Commitment to Excellence** – Maintain and enhance professional knowledge; encourage colleagues' development.
9. **Equity, Diversity & Inclusion (2021 addition)** –
    - Affirm dignity and rights of all persons.
    - Recognize and dismantle systemic bias & oppression.
    - Promote diversity, inclusion, racial & social justice through advocacy, education, collaboration, and equitable services/resources.

7.1.3 Significance

- Translates **professional values → guiding principles**.
- Reinforces librarianship's role in a **democratic society**.
- Balances **freedom of access** with **professional responsibility & ethics**.

Professional Ethics in Librarianship

Aspect	Details
Nature of Ethics in Librarianship	- Universal standard code difficult to design.- Personal ethics are fundamental but assumed, not stated.- Cultural and societal variations influence perception of ethics.- Ethical issues arise at multiple levels: **primary (honesty, truth), institutional, professional, national, international**.

Conflict of Ethics	- Professional ethics may clash with **organizational loyalty**.- Conflicts may also occur between professional, national, and international ethics.- Ethical codes are **not statutory laws**, hence hard to enforce.
US Experience	- **1938**: ALA adopted first Code of Ethics (relations with authority, users, colleagues, profession, society). - **1975**: New Statement on Professional Ethics + Standing Committee on Professional Ethics formed. - **1981**: Code of Ethics officially adopted, later revised due to criticism. - **1990**: ASIS drafted Code of Ethics (responsibilities to individuals, society, sponsor, employer, profession) – but remained in draft form.
UK Experience	**1978**: Working Party on Professional Ethics formed. - **1980**: Draft prepared.- **1983**: Final **Code of Professional Conduct** adopted at 100th Annual Meeting of LA.- **Unique Feature**: Implementation mechanism – sanctions by LA's Disciplinary Committee.- **Key Features**: a) Competency of librarian b) Client privacy & discretion c) Professional independence & intellectual freedom d) Impartiality e) Financial ethics f) Integrity of members
Indian Experience	- Mostly remained at **literature survey level**.- References: A.K. Mukherjee (*Librarianship – Its Philosophy and History*, 1966), R.L. Mittal (*Library Administration*, 1964), Meganand (1962), Amitabh Chatterji (1965).- **IASLIC Conference (1984)**: Main serious attempt – 10 papers presented. - Topics covered: Overviews of professional ethics, university/special library ethics, and relation of **Ranganathan's Five Laws** to professional ethics (esp. research libraries) - Provided good references for further study.

6.2 Code of Ethics of Librarians and Information Professionals

Issued by: The Polish Librarians Association

Introduction

Basic moral values defining the professional mission of librarians and information professionals involve:

- Protection of intellectual freedom, freedom of expression, and freedom of access to knowledge, information, and culture.
- Compliance with ideological, political, and religious neutrality.

Librarians and information professionals are persons of public trust, mediators between readers/information users and the resources they need.

The code defines basic principles binding for the profession and is divided into three groups:

1. **General principles**
2. **Ethical standards** (toward the community, users, resources, colleagues, and employers)
3. **Obligations for popularizing and complying with ethics**

Part One: General Principles

1. Librarians recognize, satisfy, and develop users' informational, educational, cultural, and entertainment needs, ensuring free access to national and international resources, and preserving cultural and scientific heritage.
2. They oppose censorship and all forms of limiting access to knowledge, relying on professional judgment and best practice.

3. Libraries and information centers are institutions of **public trust**, serving the public good by ensuring the highest quality services to all users.
4. Respect diversity of users, ensuring equal opportunities and respect for human rights, especially intellectual freedom.
5. Uphold users' right to privacy and discretion.
6. Strive to provide core services free of charge, especially access to valuable informational and cultural resources.
7. Respect copyright and intellectual property rights.
8. Continuously improve professional knowledge and skills, applying them fully in service.

Part Two

II. Toward the Community

1. Disseminate awareness of the importance of knowledge and free access to information for improving quality of life and cultural development.
2. Place the community's interest above personal interest.

III. Toward the User

1. Serve all users impartially, with respect, and in line with their needs.
2. Protect confidentiality of user data and reading habits.
3. Provide the best research conditions through well-organized resources, logical systems, and a welcoming environment.
4. Support disadvantaged users, including the disabled, children, youth, and cultural minorities.
5. Provide honest information about the scope and quality of services/resources.
6. Communicate rules and regulations transparently, avoiding favoritism.
7. Remain impartial, avoiding biased judgments of content.
8. Treat user criticism with respect and respond honestly to complaints.

IV. Toward Resources

1. Respect and preserve entrusted resources, complying with copyright laws and netiquette.
2. Ensure high-quality information systems and services.
3. Select and update resources based on user needs and professional standards, applying impartial and objective evaluation.
4. Strive to use reliable resource evaluation methods informed by critics and user needs.
5. Prevent discrimination in resource selection and organization.
6. Inform users when materials are excluded due to rarity, value, confidentiality, or social harm.

V. Toward Colleagues and the Profession

1. Work reliably, follow institutional codes, and strive for professional excellence.
2. Promote teamwork based on good organization rather than hierarchy.
3. Demonstrate solidarity, promoting a positive image of the profession.
4. Engage in respectful, substantive discussions, upholding professional ethics.
5. Support colleagues' professional development and participate in associations.
6. Managers bear special responsibility for setting ethical examples.
7. Ensure clarity, precision, and reliability in communication and information creation.

VI. Toward Employers

1. Be loyal, protect the institution's reputation, and strengthen its public image.
2. Support institutional goals with knowledge and skills.
3. Develop institutional resources, methods, and tools.
4. Expect fair compensation, but never compromise service quality based on salary.
5. Avoid unethical practices, even if suggested by superiors.

Part Three: Final Resolutions

1. Comply with professional ethics in all activities.

2. Promote awareness of ethical and legal aspects of librarianship.
3. Resist unethical behavior within the profession.

Approved: February 2, 2005, by the Polish Librarians Association.

15.3 A General Account of Library Associations in India

- Early associations:
  - Baroda Library Association (1910)
  - Andhra Desa Library Association (1914)
  - Bengal Library Association (1927)
  - Madras Library Association (1927)
- **Indian Library Association (ILA)** founded in 1933.
- Post-independence period saw growth in the number of associations.
- Current scenario:
  - Many national, state, and subject-specialized associations exist.
  - Examples: Govt. of India Libraries Association (GILA), Indian Association of Teachers of Library & Information Science (IATLIS), Micrographic Congress of India (MIC), Society for Information Science.
- Limitations:
  - Few associations are active in professional development.
  - Professionals show little interest in membership.
  - Lack of library legislation in many states shows limited effectiveness.
- **Need:** Better functioning and performance of associations.

15.3.1 Indian Library Association (ILA)

Origin and Growth

- Founded: 1933, Calcutta (after All India Library Conference).
- Registered society, HQ at Delhi.
- Between 1933–1947: 7 All-India Library Conferences held.
- Publications: *Directory of Indian Libraries*, *Library Bulletin*.
- After Independence: steady but limited growth.
- 1983: Golden Jubilee – 22 conferences completed.
- 1992: Hosted IFLA Conference, Delhi.
- Present: Efforts to make ILA strong and effective.

Publications

- *ILA Bulletin* (quarterly journal).
- *ILA Newsletter* (monthly).
- Proceedings of All-India Library Conferences (since 1978).
- Pre-seminar volumes for ad hoc seminars.
- *Indian Library Directory* (4th edition, 1985).
- *ILA Members Directory* (1987).
- *NALANDA Database* (1995) – covering 10,000+ libraries (Academic, Public, Special).
- Annual Reports, Accounts, and other publications.

Continuing Education

- Launched workshops and training on computer applications in libraries.
- More programmes planned for future.

Consultancy

- Processed 35,000 volumes for Lal Bahadur Shastri National Academy of Administration.
- Took up a project for Indira Gandhi National Centre for the Arts (1987).

Professional Issues

- Advocates for **Library Legislation** with State Governments.
- Works with UGC and other bodies on:
    - Salary grades
    - Service conditions
    - Professional status
- Drafted proposals for **National Policy on Library and Information System**.
- Uses All-India Conferences to pass resolutions and pursue implementation.

Participation in Official Bodies

- Represented in:
    - Seventh Plan Working Group on Modernization of Libraries and Informatics (1984).
    - Committee on National Policy on LIS (1986).
    - Mehrotra Committee (on pay scales for library staff).
    - Raja Ram Mohan Roy Library Foundation.
    - National Bureau of Standards, UNESCO National Commission, National Book Trust, World Book Fair Committee, etc.

Relations with Other Associations

- Leading role in JOCLAI (Joint Council of Library Associations in India).
- Strong relations with IASLIC and state associations.

International Activities

- Member of IFLA and Commonwealth Library Association.
- Hosted IFLA General Conference, Delhi (1992).
- Organized:
    - International Conference on Ranganathan's Philosophy (1985).
    - IFLA UAP Regional Seminar (1985).
    - FID/CR Regional Seminar (1985).

Future Perspectives

- Well organized, confident, and expanding programmes.
- Aims to meet professional aspirations and strengthen librarianship in India.

15.3.2 Indian Association of Special Libraries and Information Centres (IASLIC)

- **Founded**: 1955 at Calcutta.
- **Headquarters**: Calcutta.
- **Objective**: To promote special libraries and information centres in India (similar to UK's ASLIB and USA's SLA).
- **Formation**:
    - 25 June 1955 – meeting under Dr. S. L. Hora at Calcutta.
    - 3 Sept 1955 – decision to establish IASLIC.
- **Contribution**: Over 40 years of activities to improve special libraries; earned recognition for systematic work.

15.3.3 American Library Association (ALA)

- **Founded**: 1876 at Philadelphia (during centennial celebrations).
- **Headquarters**: Chicago, USA.
- **Address**: 50, East Huron Street, Chicago, Illinois.
- **Significance**: Oldest and largest library association in the world.
- **Role**:
    - National voice for library interests in the USA.
    - Strong foundation, wide base, and expanding programmes.
    - Promotes intellectual freedom and library development.

15.3.4 Library Association (LA-UK)

- **Founded**: 1877 at London (after International Conference of Librarians at Brussels).
- **Address**: 7 Ridgmount Street, London WC1E 7AE.
- **Renaming**:
  - 1896 – named "Library Association."
  - 1898 – granted Royal Charter.
- **Publications**:
  - *Library Association Record* (monthly).
  - *Journal of Librarianship* (quarterly).
  - *British Humanities Index*, *Applied Social Science Index and Abstracts*, *LISA*, *Current Technology Index*.
  - Notable: Walford's Guide to Reference Materials.
- **Activities**:
  i) **Conferences** – Annual, plus branch/group meetings.
  ii) **Education** – Conducting exams, courses, and continuing professional training.
  iii) **Library Legislation** – Initiatives behind Public Libraries Acts (1892, 1919, 1964).
  iv) **Library Research** – Projects with British Library, ASLIB.
  v) **Relations** – Advisory role in British Library (1973) establishment; inter-library cooperation.
  vi) **Standards** – Code of ethics, guidelines, professional conditions.
- **Awards**:
  - Carnegie Medal (Best Children's Book).
  - Kate Greenaway Medal (Best Illustrated Book).
  - Wheatley Medal (Outstanding Index).
  - Besterman Medal (Outstanding Bibliography).
  - Mc-Colvin Medal (Best Reference Work).
- **International Role**: Collaborates with UNESCO, IFLA, FID; works with Commonwealth Library Association.
- **Future Perspective**: Reports *Futures-1* and *Futures-2* (since 1986) – optimistic outlook.

International Federation of Library Associations and Institutions (IFLA)

Aspect	**Details**
Founded	1929
Nature	Non-governmental professional organization
Early Phase	First two decades confined to Europe & America; limited role
Post-war Growth	Gained consultative status with **UNESCO**; gradual expansion
Major Boost	1961 – *International Conference on Cataloguing Principles* (Paris) 1971 – Secretariat shifted to The Hague; global membership expanded under President Herman Liebaers
Objective	Promote international understanding, cooperation, research, development, and representation of librarianship in international matters
Membership (1986)	- **171** member associations - **823** member institutions - **123** countries - Personal affiliates allowed - Consultative status for related international organizations
Governing Structure	- **Council** – supreme governing body (elected by members) - **Executive Board** – administration & management

	- **Professional Board** – coordination & planning of professional activities - **Round Tables & Working Groups** – for specific professional tasks
Special Offices	- **International Office for Universal Bibliographic Control** (UBC) - **International Office for International Lending** (British Library, UK) - **Regional Bureaus** – Kuala Lumpur (Malaysia), Dakar (Senegal)
Medium Term Programmes (MTP)	Planned for 5-year periods (1976–1980, 1981–1985, 1986–1990)
Major Programmes	- **Universal Bibliographic Control (UBC)** – 1974 - **Universal Availability of Publications (UAP)** - **International Standard Bibliographic Description (ISBD)** - **International MARC** Supported by UNESCO
Special Focus	Development of library work in **Third World countries** (Asia, Africa, America, Caribbean) through conferences, seminars, fellowships, training, syllabus preparation, braille books, rural library services
Other Interests	- Standards for library work - Public library legislation - Library statistics
Annual General Conference	- ~2,000 delegates attend - Includes pre & post-conference seminars & roundtables - Key platform for international cooperation
Publications	- **IFLA Journal** (quarterly) - **International Cataloguing** (quarterly) - **IFLA Annual** (annual) - **IFLA Directory** (annual) - **Monograph Series** (K.G. Saur) - **UBC Publications**
India & IFLA	- Indian Library Association (ILA) and others became members - India represented in Executive Board - **1985** – IFLA Regional Seminar on UAP (New Delhi) - **1992** – IFLA General Conference held in New Delhi (hosted by ILA)

15.3.5 Association for Information Management (ASLIB)

Address: ASLIB, Information House, 20–24 Old Street, London EC1V 9AP, UK.

Background

- Founded in **1926** as the **Association for Special Libraries and Information Bureau (ASLIB)**.
- Renamed in **1983** to **Association for Information Management** to reflect expanded scope.
- Retained the acronym **ASLIB** due to wide professional recognition.
- **1949:** British Society for International Bibliography merged with ASLIB.
- Played a major role in post–World War II reconstruction by emphasizing the importance of information in national development.
- Recognition by the **British Government** as a **research association**.
- Contributed to the creation of the **Office of Scientific and Technical Information**, precursor to the **British Library**.

d) Publications

- **Serials:**
    - *ASLIB Proceedings* (monthly)

    - *ASLIB Booklist* (monthly)
    - *ASLIB Information* (monthly)
    - *ASLIB Newsletter* (monthly)
    - *Index to Theses* (annual)
    - *Journal of Documentation* (quarterly)
    - *Netlink* (3 issues/year)
    - *Program: News of Computers in Libraries* (quarterly)
    - *Technical Translation Bulletin* (3 issues/year)
- **Occasional Publications:** Monographs, directories, reports, proceedings, bibliographies.
- Notable: *ASLIB's Handbook of Special Librarianship and Information Work* (5th ed., 1985).

Chapter 7 : Standards and Copyright

7.1 International Standard Book Number (ISBN)

Definition

- ISBN = *numeric commercial book identifier* (unique for each edition/format).
- Assigned by affiliates of the **International ISBN Agency**.
- Different ISBNs for: e-book, paperback, hardcover, audiobook, etc.
- Same ISBN retained for *unchanged reprints*.

7.1.1 Length

- **Before 2007:** 10 digits.
- **From 1 Jan 2007:** 13 digits (compatible with *Bookland EAN-13*).

7.1.2 History

- **1966:** 9-digit *Standard Book Numbering (SBN)* system created (UK).
- **1967:** ISBN devised in UK by **David Whitaker** ("Father of ISBN").
- **1968:** Adapted in USA by **Emery Koltay**.
- **1970:** ISO 2108 published (10-digit ISBN).
- **1974:** UK shifted from SBN to ISBN.
- ISO appointed **International ISBN Agency** as registration authority.

7.1.3 Structure of ISBN

- **10-digit ISBN** → 4 parts.
- **13-digit ISBN** → 5 parts:
    1. Prefix element (978 / 979 by GS1)
    2. Registration group element (language or country group)
    3. Registrant element (publisher code)
    4. Publication element (title/edition)
    5. Check digit (error control)

7.1.4 Conversion

- A 9-digit SBN → ISBN by prefixing **0**.
    - Example: SBN 340-01381-8 → ISBN 0-340-01381-8.
- Some publishers used 12-digit SBN (last 3 digits = price).

7.1.5 Applications

- Identifies books globally.
- Mandatory for publishers in most countries.
- Since **2016**, also used in China for **mobile games**.

7.1.6 Usage Statistics (2020)

- **USA:** 3.9 million ISBNs (lifetime > 39 million).
- Others: Korea (329,582), Germany (284,000), China (263,066), UK (188,553), Indonesia (144,793).

7.1.7 Related Identifiers

- **ISSN** – International Standard Serial Number (periodicals).
- **ISMN** – International Standard Music Number (music scores).

ISBN Details

Aspect	Details
Full Form	International Standard Book Number
Nature	Numeric commercial book identifier, unique for each edition/variation
Administered by	International ISBN Agency (affiliates in each country)
When Required	Each edition/format (hardcover, paperback, e-book, etc.) gets a separate ISBN; unchanged reprints use the same ISBN

Length	- **10 digits** → before 2007 - **13 digits** → on/after 1 Jan 2007
Assignment	Nation-specific, based on size of publishing industry
First Developed	1967, based on **Standard Book Number (SBN)** (1966, UK)
SBN → ISBN	Any 9-digit SBN can be converted into a 10-digit ISBN by prefixing "0"
International Standard	ISO 2108 (1970)
Key Contributors	- **Gordon Foster** (created SBN, 1965, UK) - **David Whitaker** (UK, 1967 – "Father of ISBN") - **Emery Koltay** (US, 1968 – later Director, Bowker ISBN Agency)
Registration Authority	International ISBN Agency (under ISO TC 46/SC 9)
Compatibility	Since 2007, ISBN-13 compatible with *Bookland EAN* (European Article Numbering, 13-digit format)
Other Identifiers	- **ISSN** – International Standard Serial Number (for periodicals) - **ISMN** – International Standard Music Number (for musical scores)
Special Cases	Privately published books may appear without ISBN; sometimes ISBN is assigned later
Historical Notes	- UK used 9-digit SBN until 1974 - Some publishers used 12-digit SBN (last 3 digits = price) - Example: *Mr. J. G. Reeder Returns* (1965) → SBN 340 01381 8 → ISBN 0-340-01381-8
Modern Use	Since 2016, China uses ISBNs to identify mobile games
Statistics (2020)	- **US**: 3.9 million ISBNs (biggest user) - **Korea**: 329,582 - **Germany**: 284,000 - **China**: 263,066 - **UK**: 188,553 - **Indonesia**: 144,793 - **Lifetime US ISBNs**: 39 million+

7.2 International Standard Serial Number (ISSN)

Definition

- ISSN = *eight-digit code* to uniquely identify **periodicals** (e.g., journals, magazines, newspapers).
- Useful for distinguishing serials with the same title.
- Widely used in **cataloging, ordering, interlibrary loan, and serials management**.

7.2.1 History & Standardization

- First drafted by **ISO** in **1971**, published as **ISO 3297 (1975)**.
- Maintained by **ISO Technical Committee 46 / SC 9**.

7.2.2 Media Versions

- A different ISSN is assigned for each format:
  - **Print ISSN (p-ISSN)** → print version.
  - **Electronic ISSN (e-ISSN)** → online version.
- **ISSN-L (Linking ISSN):** introduced in **ISO 3297:2007**.
  - One identifier for *all versions* of the same serial.
  - Chosen from the first published version (usually print).

    - Helps in search, retrieval, and linking (library catalogs, OpenURL, knowledge bases).

7.2.3 Register

- Maintained by the **International Centre for ISSN → ISDS Register (ISSN Register)**.
- By 2016: contained **1.94 million records**.
- Access is subscription-based, but searchable indirectly via **WorldCat**.

7.2.4 Use in Publications

- Printed on serial covers and listed in publication data.
- Found on journal websites and bibliographic databases.
- Searchable by entering ISSN directly (e.g., issn:1234-5678 in WorldCat).

7.2.5 Comparison with ISBN

- **ISBN** → books (monographs).
- **ISSN** → serials (continuing resources).
- **New ISSN** is assigned whenever a **major title change** occurs.
- **ISBN may also be assigned** to individual issues of a serial, in addition to the ISSN for the series.

7.2.6 Extensions

- Built on ISSN to reference specific parts of a serial:
    - **PII** (Publisher Item Identifier).
    - **SICI** (Serial Item and Contribution Identifier).

7.2.7 Media vs. Content Orientation

- Traditional → "media-based identification" (separate ISSN for print, online, CD-ROM, etc.).
- Later demand → "content-based identification."
- This shift contributed to the rise of **DOI (Digital Object Identifier)** for individual articles.

7.2.8 Standard Media Labels

- **p-ISSN** → print version.
- **e-ISSN (or eISSN)** → online version.

8.1 MARC (Machine-Readable Cataloging)

- A **standard set of digital formats** for the machine-readable description of library items (books, DVDs, digital resources).
- Used in **computerized library catalogs** and library management software.
- Ensures **bibliographic information can be shared** freely between computers.
- Works with other standards:
    - **AACR/RDA** → Guidelines for formulating bibliographic data.
    - **ISBD** → Guidelines for displaying MARC records in human-readable form.

8.2 History of MARC

- Developed by **Henriette Avram (1965–1968)** with the Library of Congress.
- 1971 → Became **U.S. national standard** for bibliographic data dissemination.
- 1973 → Became **international standard**.
- Versions:
    - **MARC 21 (1999)** → Harmonization of U.S. & Canadian MARC.
    - **UNIMARC** → Maintained by IFLA, widely used in Europe.
- **MARC 21 family** includes bibliographic, authority, holdings, classification, and community information formats.

8.3 Record Structure and Field Designations

8.3.1 Field Designations

- Each **field = specific info** (author, title, publisher, date, etc.).
- Uses **three-digit numeric codes (001–999)**.
    - Field 100 → Author.

    - Field 245 → Title.
    - Field 260 → Publisher.
- **Subfields** (letters/numbers) → More detail.
    - Example: 260
        - (a) Place of publication.
        - (b) Publisher.
        - (c) Date.

8.3.2 Record Structure

- Stored/transmitted as **binary files**.
- Uses **ISO 2709 standard** → defines record structure.
- Includes:
    - Marker for beginning/end of record.
    - Directory for locating fields & subfields.
- **MARCXML (2002)** → MARC represented in XML, compatible with **SRU** or **OAI-PMH** standards.

8.3.3 Content

- MARC = **metadata transmission standard**, not a content standard.
- Content defined by **external rules**, e.g.:
    - **RDA** → Expression of physical characteristics.
    - **LCSH** → Authorized subject headings.
    - Other cataloging rules/classification schedules may also be used.

MARC Formats

Format Name	Description
Authority Records	Provide information about individual names, subjects, and uniform titles. Establish an *authorized form* of each heading, with references from other forms.
Bibliographic Records	Describe the *intellectual and physical characteristics* of bibliographic resources (e.g., books, sound recordings, video recordings, etc.).
Classification Records	Contain *classification data*. Example: Library of Congress Classification encoded in MARC 21 Classification format.
Community Information Records	Describe *service-providing agencies* such as homeless shelters, tax assistance providers, etc.
Holdings Records	Provide *copy-specific information* on a library resource (e.g., call number, shelf location, volumes held).

History of Intellectual Property

7.2 Venetian Patent Statute (1474)

- Established by Republic of Venice
- Earliest codified patent system
- Granted patents for "new and ingenious device" if useful
- Basic principles still apply in modern patent laws

7.3 Statute of Monopolies (1624) & Statute of Anne (1710)

- Statute of Monopolies → foundation of patent law
- Statute of Anne → foundation of copyright law
- Introduced intellectual property concept

7.4 Literary Property (1760s–1770s)

- British debates: rights of authors & publishers
- Famous cases: Millar v Taylor (1769), Donaldson v Becket (1774)
- First use of "intellectual property" in 1769 (Monthly Review)
- Modern usage: 1808 (heading title in essays)

7.5 German & International Adoption

- North German Confederation → Schutz des geistigen Eigentums
- Paris Convention (1883), Berne Convention (1886) merged (1893)
- Formed **United International Bureaux for Protection of Intellectual Property**
- Relocated to Geneva (1960), became **WIPO (1967)**

7.6 U.S. Adoption of IP Term

- Became common after WIPO (1967)
- Popularized in U.S. after **Bayh–Dole Act (1980)**

7.7 Evolution of Patents

- Started as royal monopoly grants (Queen Elizabeth I, 1558–1603)
- Shifted to legal right for inventors (by 18th–19th century)

7.8 Notable Legal Recognition

- 1845: U.S. case *Davoll v. Brown* → IP described as "labors of the mind"
- 1791 French law: "New discoveries are the property of the author" (patent for 5–15 years)
- 1846: A. Nion used "propriété intellectuelle"

7.9 Limited Protection Tradition

- IP law → minimal protection to encourage innovation
- Knowledge viewed as public good
- Protection → limited in time & scope

7.10 Ancient & Religious Roots

- Jewish law: Hasagat Ge'vul (unfair encroachment) used for limited publisher copyright (16th c.)
- Greek state of Sybaris (500 BCE): 1-year patent for new refinements

7.11 Modern Paradigm Shift

- Earlier: high protection standards (Europe/US model)
- Now: greater flexibility, access for developing countries
- **WIPO Development Agenda (2007)**: 45 recommendations for equitable IP use
- Issues: access to medicine, seeds, source codes, research

7.12 TRIPS Agreement (1995)

- WTO agreement → minimum standards for IP protection
- Criticized for “one-size-fits-all” approach
- Most comprehensive global IP agreement

Rights

7.13 Intellectual Property Rights Types

- Patents
- Copyright
- Trademarks
- Industrial design rights
- Plant variety rights
- Geographical indications
- Trade dress
- Trade secrets (in some jurisdictions)
- Other special rights:
    - Circuit design rights
    - Supplementary protection (pharma)
    - Database rights (EU law)

Patents

7.14 Definition

- Government grants right to inventor

- Excludes others from making, using, selling, importing invention
- Limited time protection

7.15 Requirements of Patent

- Novelty (new)
- Non-obviousness
- Industrial applicability

7.16 Disclosure Requirement

- Patent owners must disclose details of invention
- Encourages knowledge sharing and further innovation

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